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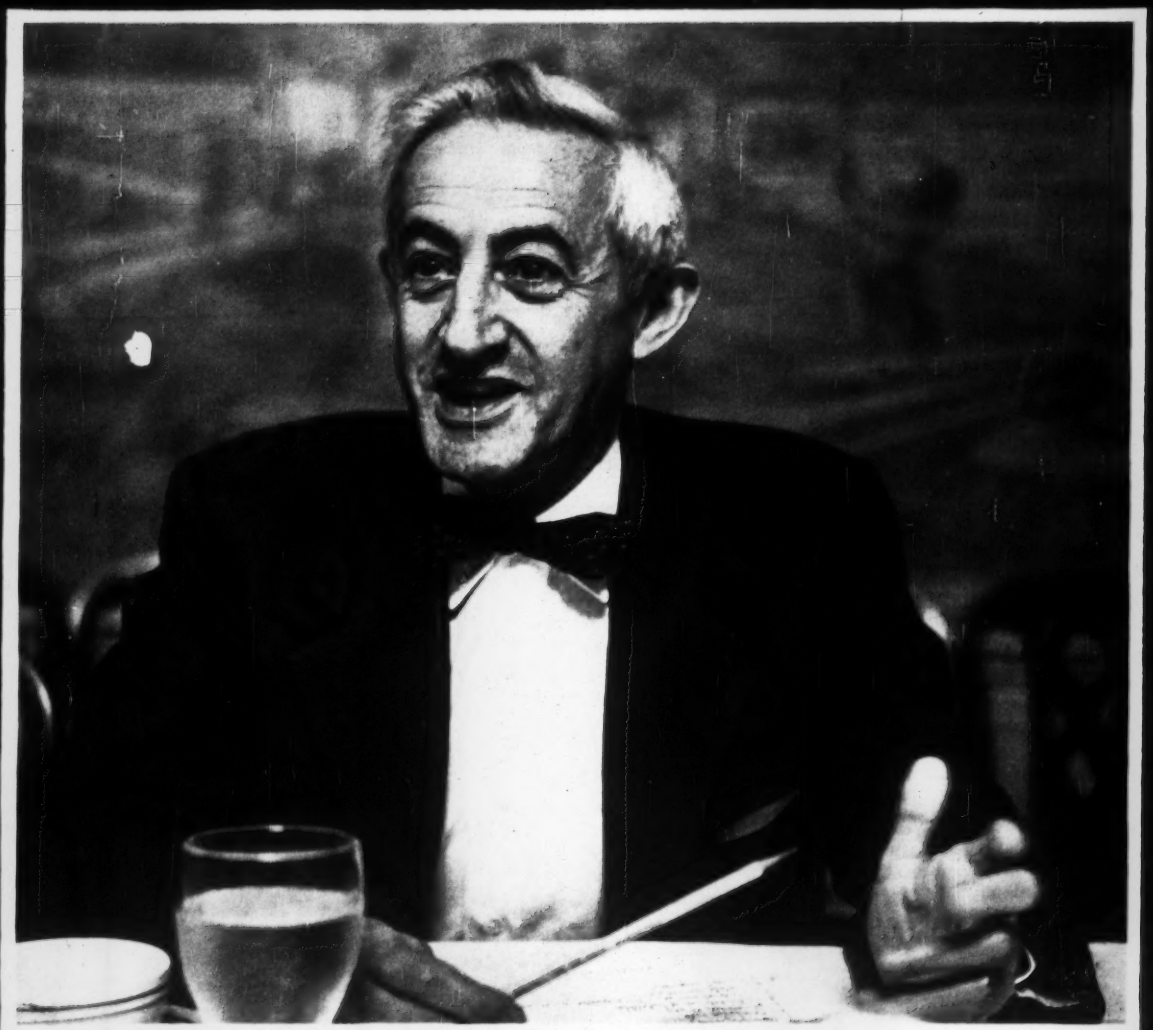

Abel Wolman: Engineering's great statesman p. 87

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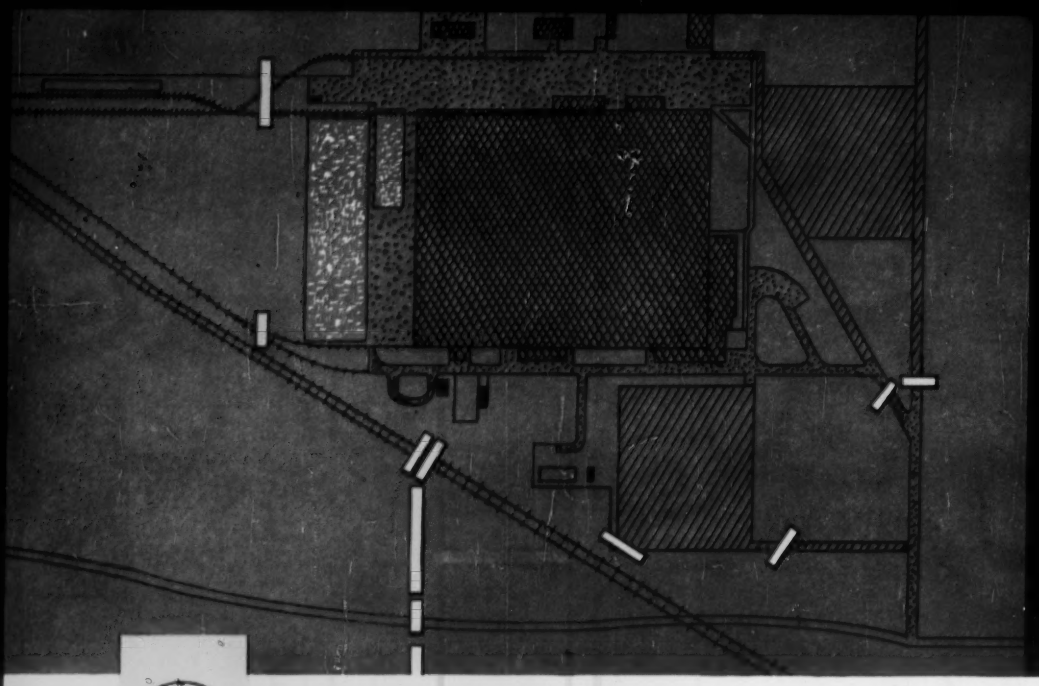


Aurora, Illinois
Plant of
Caterpillar Tractor Co.

- Buildings
- Concrete
- Graveled Areas
- Blacktop
- Armco Drainage Structures

To provide drainage for this site of a new Caterpillar Tractor Co. plant at Aurora, Illinois, eleven separate Armco Structures were installed at locations indicated on this map.

The H. K. Ferguson Company
Architects and Engineers

J. C. O'Connor & Sons, Inc.
Contractors

New Industrial Plant Site
Drained by 1910 Feet of Armco Structures

On a 350-acre site in Aurora, Illinois, Caterpillar Tractor Co. is constructing a new plant for manufacturing track-type tractors and tractor shovels. To provide drainage for the area, 1910 lineal feet of Armco Corrugated Metal Drainage Structures have been installed.

The Armco Structures helped simplify some of the engineering problems. For example, a drainage structure had to be placed under a railroad without interfering with traffic. They built a tunnel with Armco Liner Plates.

In another area, a drainage structure had to be installed in a water-filled ditch. Here, an Armco MULTI-PLATE® Structure was assembled on the bank in long sections and then skidded into place in the ditch. Sections were joined by bolting.

In other locations, limited headroom was a problem. Armco Pipe-Arch Drainage Structures were installed here.

* * *

This is just another example of the many uses for the more than 30 Armco Construction Products for industrial, highway, railway and municipal applications. All are of metal construction, easy to install, and supplied in a wide size range. Write for details. Armco Drainage & Metal Products, Inc., 4837 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

To provide drainage through a railroad fill, a twin 84-inch-diameter Armco Liner Plate Structure was tunnelled through.

This Armco MULTI-PLATE Pipe-Arch was assembled in sections on the bank of a water-filled ditch. It was skidded into position.

Armco Construction Products

245 hours less greasing time...
245 hours more profit time EVERY YEAR!

Time saved by 1,000-hour lubrication intervals on your Allis-Chalmers tractor adds up to 245 hours every year—an extra month of production!

On truck wheels, support rollers and idlers, an exclusive combination of positive, spring-loaded seals and tapered roller bearings keeps out dirt and moisture, prevents loss of lubricant.

For 1,000 tractor work hours, you can forget about every grease point below track level. When it's time for servicing, simple low-pressure flush lubrication replaces old grease completely, eliminates seal popping, prevents damage to seal faces. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

IT'S SIMPLE ARITHMETIC!

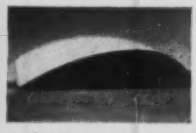
	Other Tractors	Allis-Chalmers Tractors
No. of greasings per year (5,000 hr)	up to 500	5
Greasing time (av. conditions)	½ hr	1 hr
Time spent greasing	up to 250 hr	5 hr
PRODUCTION TIME GAINED . . . 245 HOURS EVERY YEAR!		

ALLIS-CHALMERS *Engineering in Action*

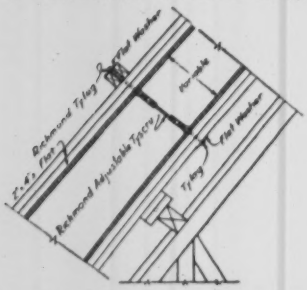
thin shell

Non-parallel forms supported by Richmond Adjustable Tyscrus in concreting achievement at MIT

To pour the continuously curved shell of the unique MIT auditorium—it thickens from 3½" at the center to over 10" at the supports—George A. Fuller Company built an inner form on elaborate scaffolding. On the lower 25 feet of the shell, the outer forms were supported on the inner ones by Richmond Adjustable Tyscrus.



The Adjustable Tyscrus were assembled by threading a pair of standard Richmond Tyscrus — resistance welded for heavy work—on the ends of a Continuous Threaded Lagstud.



GEORGE A. FULLER COMPANY
FORM DETAIL

These kept the non-parallel forms in perfect alignment while the pour was made. Assembly as well as stripping of forms was speeded by the coarse, helical-coil thread of the Tyscrus.

Send for new Richmond Handbook which tells how to pour concrete quickly and economically. It will save you time and money on your next job. Write to: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Avenue, Brooklyn 8, N. Y. or 315 So. 4th St., St. Joseph, Mo.

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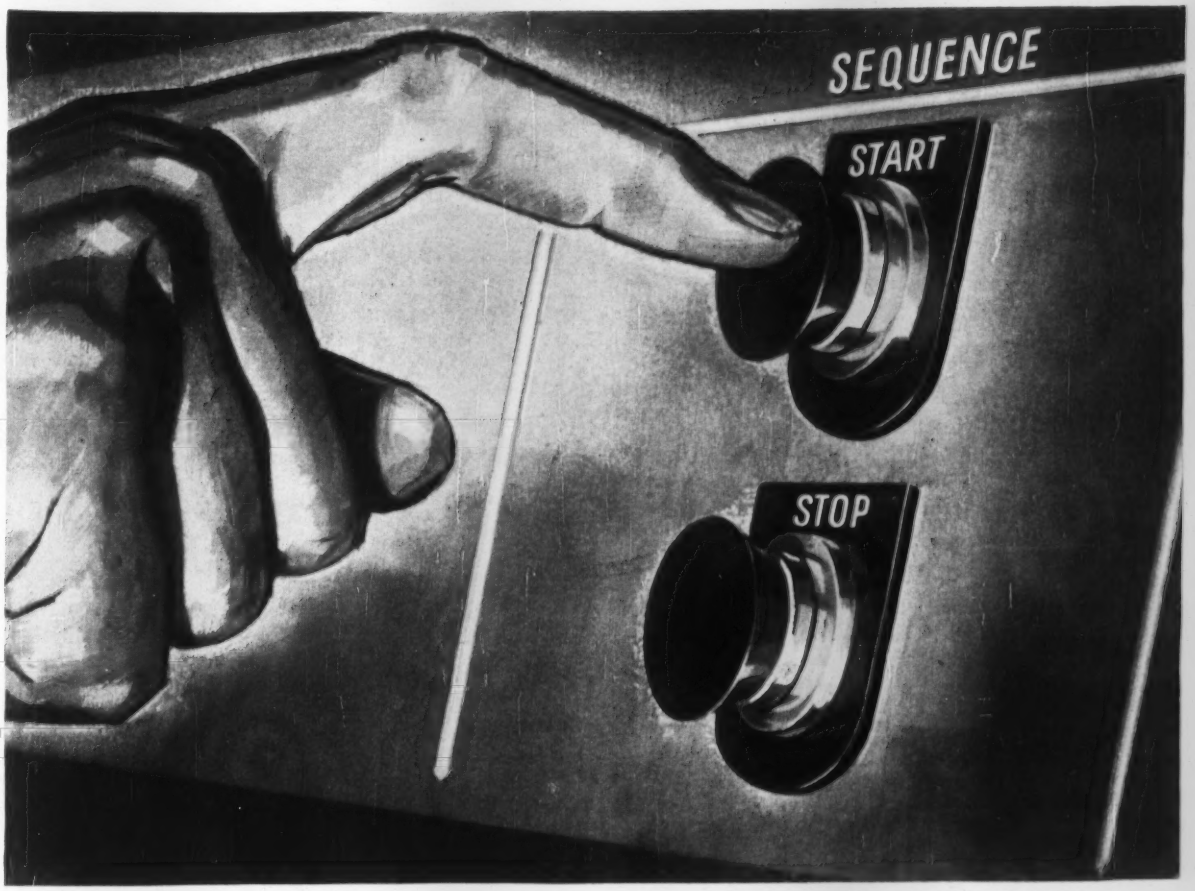
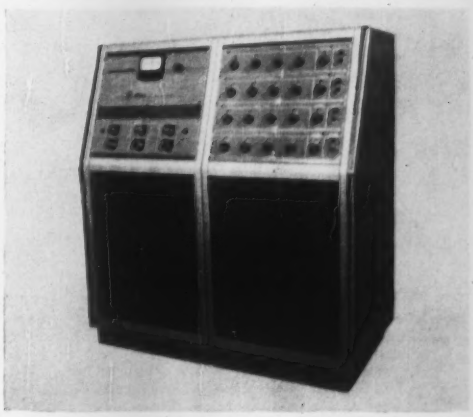


Batch electronically with Batchetron!

Here's what it will do. Operating electronically from a remote control station, the Fairbanks-Morse Batchetron can be preset with knobs and buttons to accurately control your asphalt batching from any one or more bins or tanks. The cycle of mix is also preset, and the actual batching takes place at the touch of a button.

Which of these features will improve your batching operation? Do you want remote control—for instance, batching from an air-conditioned office? Do you want the fast programming feature—for the occasional single batch from a different formula? Do you want the automatic cycling—that will duplicate the batch again and again at the touch of a button?

The Batchetron is . . . Fairbanks-Morse electronics instrumentation plus accurate weighing in the Fairbanks-Morse tradition. There is a new bulletin, No. ED-14, on the Batchetron with many suggested applications which may fit your operations. Send for it today. Fairbanks, Morse & Co., Dept. ENR-5-9, 600 South Michigan Ave., Chicago 5, Illinois.



Batchetron control console.

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a name worth remembering when you want the BEST

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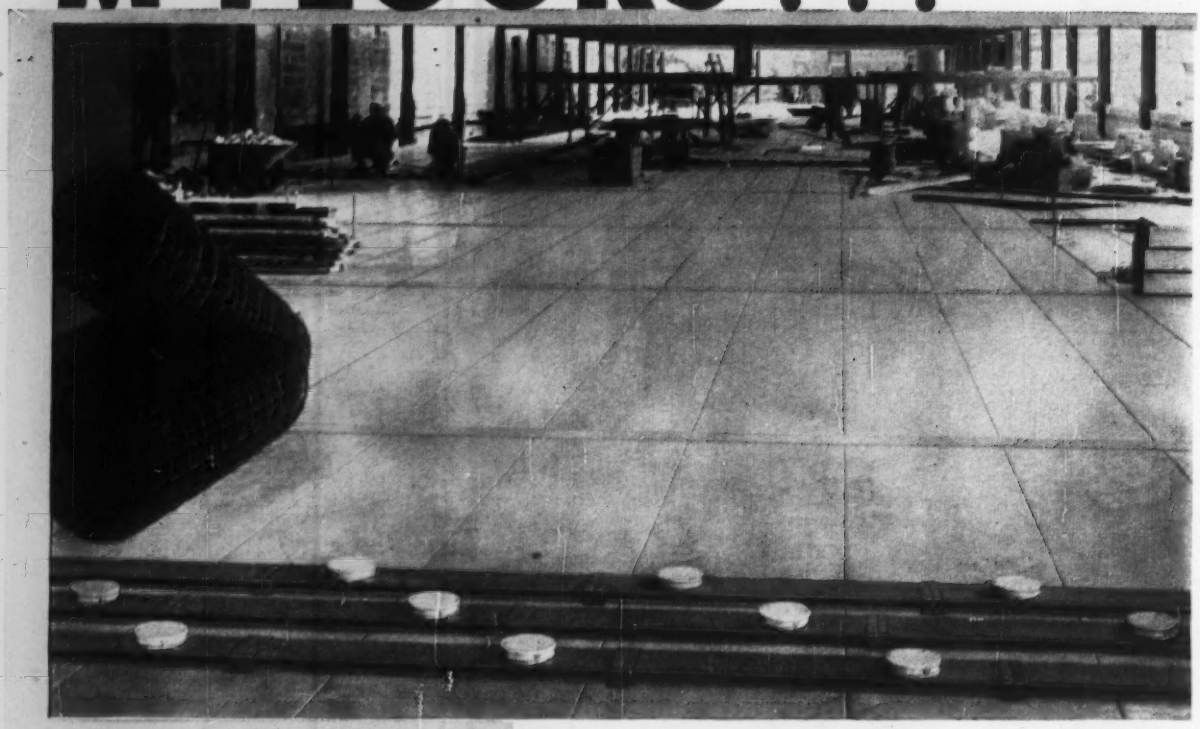
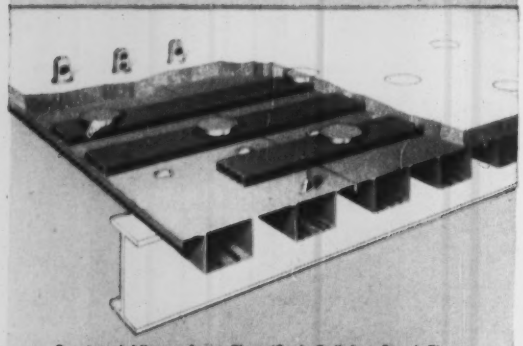
M-FLOORS . . .



YOUR Logical Choice for Electrified Cellular Steel Sub-Floor Construction!

The construction view above shows Mahon M-Floor installation in a modern Four Story Office Building for Kansas City Life Insurance Company, Kansas City, Missouri. Mahon Long Span M-Deck was employed in the Roof Construction. Edward W. Tanner & Associates, Architects. Collins Construction Company, General Contractors.



Sectional View of an Electrified Cellular Steel Floor Constructed with Mahon M-Floor Section M2, and Energized with a Three Header Duct Electrical Distribution System. Mahon M-Floor Cel-Beam Sections are available with either Two or Three 6" wide Cel-Beams in a 24" width, and in several Beam Depths to meet virtually any structural requirement.

When you build with M-Floors, you serve your client in the true tradition of your profession . . . you reduce the cost of his building through the inherent advantages of light weight floor construction . . . you build into his building the convenience of all-over electrical availability provided by the Cel-Beam Raceways in the Structural M-Floor . . . and, you insure his building against electrical obsolescence. These are the basic reasons why M-Floor construction is employed today in so many multiple story buildings. Why do engineers select M-Floors? . . . here are some of the reasons: Mahon M-Floor Cel-Beam Sections are designed to give you a better Section from a structural, electrical, and general utility standpoint. The flat Top Plate of the Mahon Section reduces both the amount and weight of concrete topping to a required minimum. The Cel-Beam Members of Mahon M-Floor Sections are 6" wide with perpendicular beam-webs. This permits greater latitude in the installation of Floor Service Fittings . . . it also permits 4" diameter access hand-holes between Header Ducts and Cel-Beam Raceways. The 6" wide Cel-Beam Members further provide adequate and evenly distributed beam-web supports for the flat Top Plate at not more than 6" on centers. Compare these points, one by one, with any other Cellular Steel Sub-Floor available today, and you, too, will be convinced that the basic functional requisites of a Cellular Steel Sub-Floor have been more fully realized in the design of Mahon M-Floor Cel-Beam Sections. See Sweet's Files for complete information and engineering data, or write for Catalogue M-57.

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MAHON

Announcing the all-nylon

B.F.Goodrich

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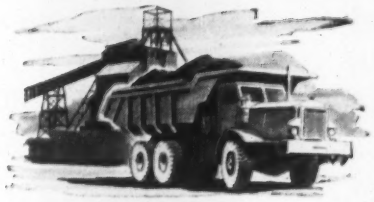
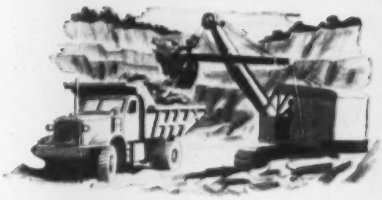
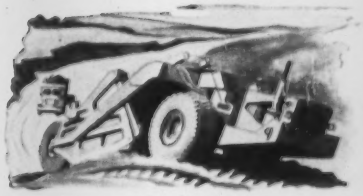


FOR MINES

QUARRIES





DIRT-MOVING JOBS

FLEX-RITE construction prevents unnecessary tire failures!

THE new B.F.Goodrich Rock Service tire—unlike an ordinary tire—is *built to its inflated shape*. When inflated, the tire body is not distorted. The whole tire flexes evenly, uniformly. No *localized* stresses that often cause unnecessary tire failures. FLEX-RITE construction eliminates this major cause of tire trouble and expense!

New B.F.Goodrich Rock Service tires are built with FLEX-RITE nylon cords. There are no cross threads to rub and chafe, creating tire-killing heat. FLEX-RITE nylon cords withstand double the impact of other materials, resist heat blowouts and flex breaks. Result: more retreadable Rock Service tires.

Greater traction! Puncture protection!

The double chevron tread gives maximum traction and skid resistance in forward or reverse. Rugged sidewalls defy rock bruises. V-shaped grooves expel stones. B.F.Goodrich Tubeless construction runs cooler, protects against punctures, cuts maintenance costs, is easier to service.

See the new, money-saving Rock Service nylon tire at your B.F.Goodrich dealer's today. It's the most advanced tire on the market today built for off-the-road hauling. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Specify
B.F.Goodrich tires when ordering new equipment

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FIRST IN RUBBER

Your B.F.Goodrich dealer is listed under Tires in the Yellow Pages of your phone book

without question, and with loads of proof *

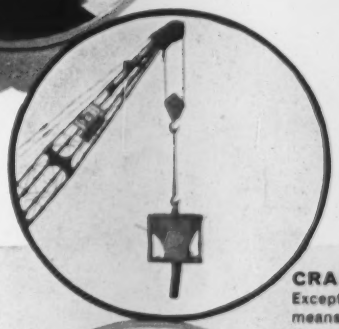
the P&H Miti-Mite is production and earning

WHEN YOU BUY a truck crane it will pay you to compare any make with the P&H Miti-Mite. This comparison will prove to you what thousands of contractors experience every day—the Miti-Mite out-performs any other small truck crane no matter what the attachment.

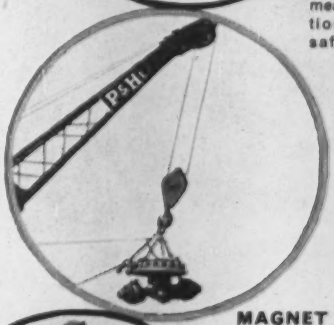
Compare these facts and figures: the Miti-Mite delivers its full rated capacity *around the full 360°* for complete flexibility . . . the Miti-Mite is rated at 8-ton crane capacity at 12′ radius . . . has an 11 cubic foot shovel capacity and a maximum trench hoe width. And for crane use the Miti-Mite can handle a 50 foot boom with a 15 foot jib. These are the features you want in a truck crane for real capacity and high earning power—you'll find them only in the P&H Miti-Mite.

unbeatable in power

DRAGLINE
Full-size heavy-duty bucket is used by the Miti-Mite dragline attachment. For longer reaches, inserts in 5 and 10 foot lengths are available. Lattice-type boom provides strength without excess weight for faster cycles and greater payloads.



CRANE
Exceptional stability means faster operation with greater safety. Planetary boom hoist is standard. Boom point of the gooseneck is open-throated for maximum boom load clearance. 8-ton capacity at 12' radius.



MAGNET
Handles 39-inch magnet with 5 kw. generator. Planetary boom hoist provides quick adjustment to any working angle.

CLAMSHELL
No need for lightweight buckets with a Miti-Mite—this versatile machine swings a standard construction bucket.

TRENCH HOE
Gooseneck boom permits greater digging depths and dumping heights. Performs in rock, hard pan, heavy shales, works in laterals, septic tank areas.

SHOVEL
16½-foot shovel boom is all-welded with box section design for maximum strength without weight. Electrically tripped dipper has 11 cu. ft. capacity. Positive chain crowd and retract mechanism.

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P&H Construction & Mining Division
Milwaukee 46, Wisconsin

HERE'S PROOF OF MITI-MITE'S EARNING POWER!

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Milwaukee 46, Wisconsin
Gentlemen:
Please send illustrated, certified, on-the-job performance reports proving Miti-Mite's extra capacity and earning power.

Name_____
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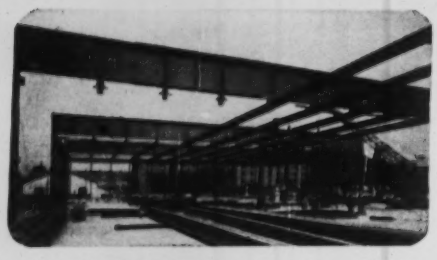
City_____ Zone____ State_____

A triumph of Structural Steel...



IN CONSTRUCTION—the immense exposed plate girders in place, with purlins being hung.

ARCHITECT:
Ludwig Mies van der Rohe

ASSOCIATE ARCHITECT-ENGINEER:
Pace & Associates

STRUCTURAL ENGINEER:
Frank J. Kornacker

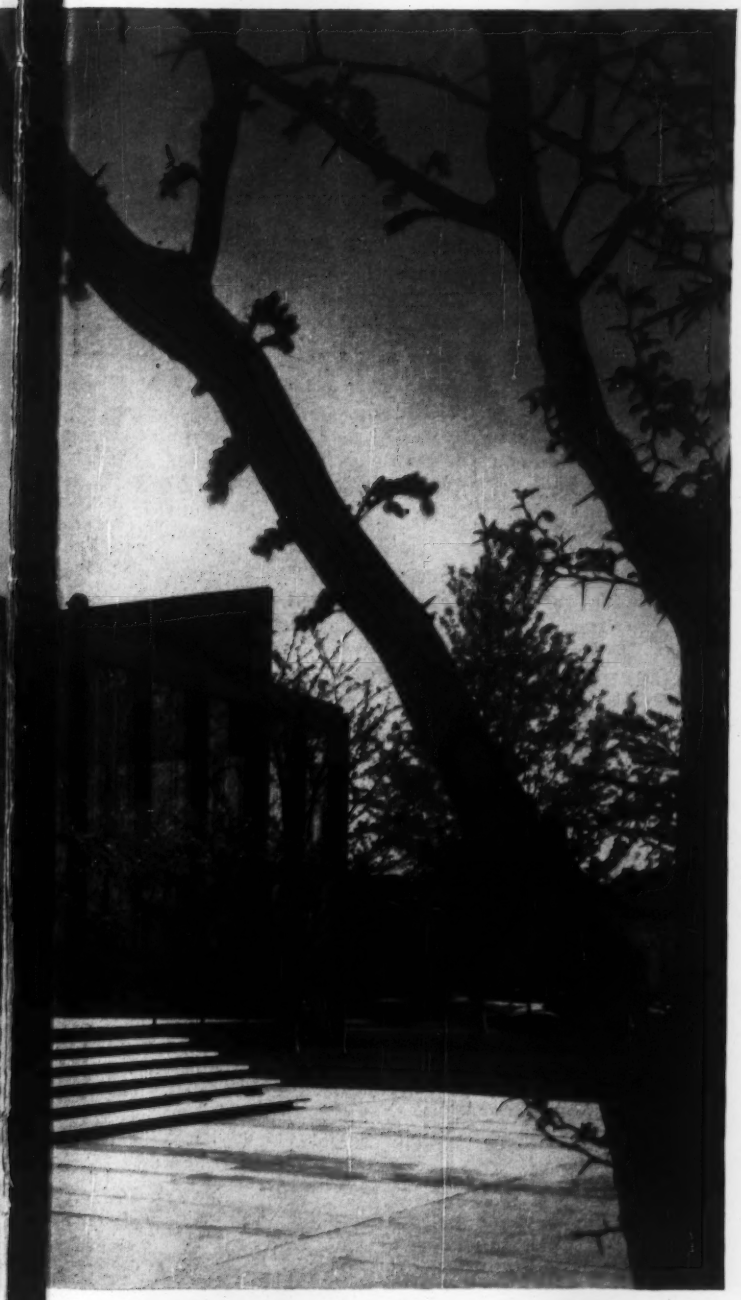
STRUCTURAL FABRICATOR:
Hansell-Elcock

ERECTORS:
Cragin Construction Co.

LANDSCAPE DESIGN:
Alfred Caldwell, Architect

VIEW from main entrance, overlooking entrance terrace. All walls are panels of obscure and clear glass framed in steel.

...CROWN HALL



26,000 sq. feet without a single interior column!

CROWN HALL, at Illinois Institute of Technology, marks a milestone in the use of Structural Steel—a classic example of strength, economy, and honest, simple beauty.

The main floor of Crown Hall is a single room, 220 ft. long, 120 ft. wide, and 19½ ft. high. Yet, in this immense room there is not one structural column.

The vast roof is suspended from 6'-deep plate girders, which project out of the building as an exterior skeleton. These girders were shop-fabricated, and each was delivered to the building site in two 60-ft. sections. There, they were spliced and hoisted into place. Purlins are hung beneath the roofing.

This huge, open hall, which could be used for virtually anything from a factory to a theatre, was built at a cost of $13.71 per sq. ft.

Strength . . . economy . . . versatility . . . simple, vigorous beauty—these are the qualities offered by Structural Steel; qualities proved time and again in structures that range from mighty, bustling skyscrapers to serene, single-story panoramas of steel and glass like Crown Hall.

Structural Steel is easily the most economical of load-carrying materials—and the strongest. It will take more abuse than other structural materials, effectively resisting tension, torsion, shear and compression. Enclosed in buildings, it lasts indefinitely, needing no maintenance. Structural Steel may be welded, riveted, or bolted, and can be erected in any weather. Since steel members are fabricated indoors, weather cannot affect the quality of workmanship.

◀ **CROWN HALL** houses the Dept. of Agriculture, Institute of Design and Planning Dept. The entrance terrace is a gathering place for students between classes. The basement houses shops and classrooms.

USS
STRUCTURAL STEEL

UNITED STATES STEEL CORPORATION, PITTSBURGH
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plate girders in place, with purlins being hung.

LANDSCAPE DESIGN:
Alfred Caldwell, Architect

and clear glass framed in steel.

TRU-LAY *flexible* PUSH-PULLS
FOR
Remote Control Jobs
on a great variety of
Construction Equipment

Adaptability to all sorts of mechanical situations explains, in large measure, the wide-spread use of TRU-LAY PUSH-PULLS on tractors and their accessories, power shovels, winches, road graders, road oilers, dump trucks, snow plows, engine-driven pumps, rock crushers and other construction equipment.

These dependable Push-Pulls are used for the remote control of hydraulic and air valves, brakes, clutches, transmissions, throttles, chokes, governors, power take-offs, and many other applications.

TRU-LAY PUSH-PULLS are precision products, not gadgets. They provide positive remote-action whether anchorages are fixed or movable . . . for light loads or loads up to 1,000 lbs. . . . and they are effective over short or long distances, up to 150 feet or more.

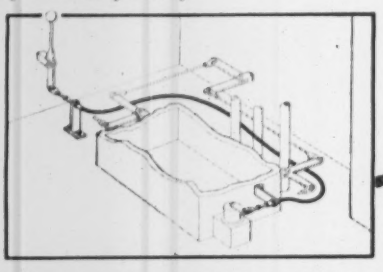
TRU-LAY PUSH-PULLS are dependable and accurate even under the most adverse conditions

They perform effectively under extremes of heat or cold . . . from jet engine temperatures to 70° below zero F. The inner, working member (lubricated for life during assembly) is fully protected by the tough, flexible conduit. Abrasive dusts, dirt and moisture are sealed out. Fittings are cold-swaged to make them integral parts of the control unit. It is a matter of record that we have never heard of a TRU-LAY *flexible* PUSH-PULL wearing out in normal service. Use of these versatile, simple and rugged controls increases ease of operation and means the virtual elimination of maintenance.

Advantages of Tru-Lay Push-Pull flexibility and simplicity are pictured below

Simplicity vs Complexity

Compare the TRU-LAY PUSH-PULL cable in illustration with the mechanical linkage. PUSH-PULLS are simple, have but one moving part, are noiseless and give lifetime service accuracy. Linkages are complex, made of many parts; they wear at many points. Their use brings increased backlash, lost accuracy and vibration rattles.



"Solid as a rod but *flexible* as a wire rope" is a good description of TRU-LAY PUSH-PULL REMOTE CONTROLS. This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all control elements . . . greatly simplifies installation of controls by reducing the number of working parts . . . damps out noise and vibration. Versatile, accurate, adaptable, rugged . . . they are the ideal remote controls for construction equipment.

Our **DATA FILE** *will answer your further questions*
Write for a copy without obligation

Push-Pull DATA FILE

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AUTOMOTIVE and AIRCRAFT DIVISION
AMERICAN CHAIN & CABLE
TRADE MARK

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2216-F South Garfield Ave., Los Angeles 22 • 929-F Connecticut Ave., Bridgeport 2, Conn.

Reader Comment

Public Relations

SIR:—Your editorial "Public Relations on Roads" (ENR March 21, p. 192) deserves comment.

Some think public relations is a "gimmick" to sell a bill of goods that cannot travel on its own merits. I think that public relations must start with a product or program so good that it would sell itself if the public could but understand it. Public relations can clarify but it cannot disguise. However the highway trade does not have a program good enough to travel on its own merits in many respects.

Highway men usually do not have authority to concern themselves more than superficially, if that, with the effects of their work on the communities they affect. There is sometimes a public hearing, often after all decisions are made. The cheapest road, or sometimes even the cheapest design cost, or the best interests of the through traveler or the trucking industry must govern, and no community interests can be allowed to interfere. Not one cent of highway money can be spent even to find out how to integrate the highway into the community.

I am occasionally asked by community-oriented groups what can be done to forestall blight threatened by highway work. Some programs complained of are sound, some are not and some could easily be reconciled to community needs. However, such inquiries usually lead to the pronouncement that no community interest, however great, may influence highway planning since the plans are usually already made by that time and anyway there is no authority to spend highway funds finding out what community interests are, much less conducting any integrated planning from which a coherent highway program might emerge.

The application of sound city planning at the beginning of a large highway program would result in lower costs and longer useful highway life.

This condition is especially serious in metropolitan regions where transporta-

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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A world-wide organization ready to serve you

In May, 1882, Mahlon E. Layne drilled his first water well, thus beginning an organization that would become world-wide and world-famous. He designed the Layne Vertical Turbine Pump, Layne Shutter Screen and Layne Gravel Wall Well. These are recognized today for their combined unfailing performance in producing water for the world.

Layne has always accepted the challenge of leadership. Engineering advances and research have guided our organization from the beginning. This is the pattern which has earned Layne the reputation for world-wide leadership. We owe this leadership to the trust our valued customers have placed in our organization.

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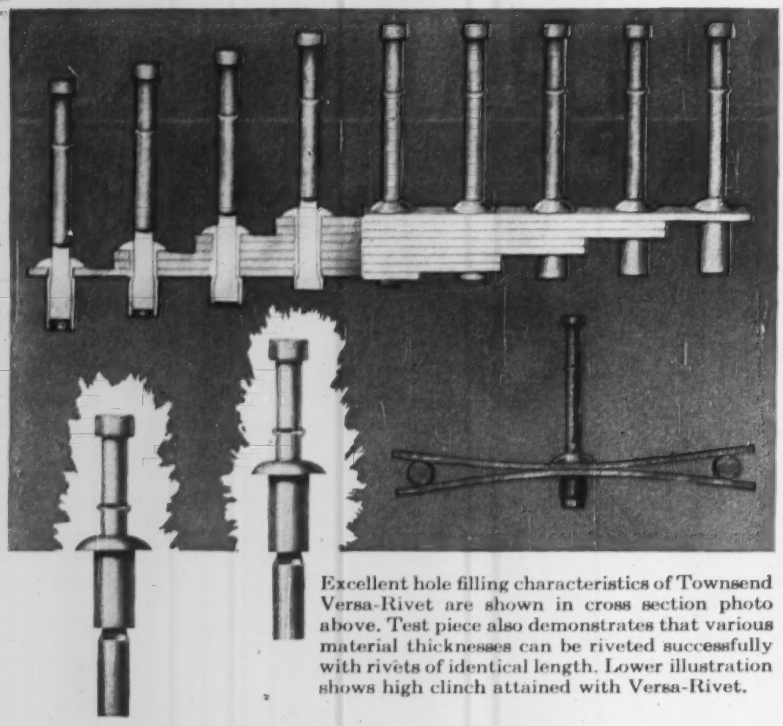
WATER WELLS • VERTICAL TURBINE PUMPS • WATER TREATMENT



Excellent hole filling characteristics of Townsend Versa-Rivet are shown in cross section photo above. Test piece also demonstrates that various material thicknesses can be riveted successfully with rivets of identical length. Lower illustration shows high clinch attained with Versa-Rivet.

New Townsend Versa-Rivet* Provides Versatile, Uniform Fastening Method

The hole filling qualities, wide grip range, high clinch, and positive stem retention now possible with the new Townsend Versa-Rivet give industry a uniformity of fastening never before available.

In the past, variations in hole diameter made it virtually impossible to completely fill the hole in every instance. The Versa-Rivet always adjusts to fill the hole, and in addition provides uniformly high stem retention.

The method of setting the Versa-Rivet also provides high clinch and makes it possible to use one length to fasten a wider range of material thicknesses. Positive inspection is easy since a properly set rivet is indicated by the amount of stem shoulder protruding above the rivet head.

The Versa-Rivet is available in the universal head with one length for each diameter. It is installed with standard Townsend rivet guns with controlled-stroke pulling heads and accessories.

For technical data on how the Townsend Versa-Rivet will give you a more uniform method of fastening, write to Townsend Company, P.O. Box 237-L, New Brighton, Pa.

*Patents issued and pending

The Fastening Authority

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NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

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. . . Reader Comment

tion needs, land uses and other factors are complex and closely inter-related. For this reason the current highway program is doing very little good in metropolitan regions where most of the people of our country live.

Is it surprising that a need for "public relations" is felt?

JOHN G. KNEILING
Consulting Engineer
Staten Island, New York

Which Holds the Record?

SIR—Your Feb. 21, issue p. 46, under the title "Largest Cantilevers to Support Roof Hangar," states the dimensions of the cantilevered roof bays for the United Air Lines San Francisco hangar will be 142 ft in depth by 363 ft in length.

You undoubtedly are familiar with the TWA cantilevered hangars in Kansas City and New York. Each cantilever area in these hangars is 160 ft in depth by over 800 ft in length.

BOYD G. ANDERSON
Consulting Engineer
Ammann & Whitney
New York, New York

EDITOR'S NOTE—The UAL hangar cantilevers will be plate girders. The TWA hangar roofs are suspended on cables. Can they truly be classified as cantilevers?

Too Much Fresh Air

We erroneously multiplied an air-infiltration rate by a factor of 60 in our Feb. 28 article on U. S. Steel Corp.'s new office building at the Homestead District Works (Showcase for Steel Curtain Walls, p. 49). The rate per lin ft of window closure is 3 cu ft per hr, not 3 cu ft per min.

CALENDAR

American Water Works Association annual conference, Atlantic City, N. J., May 12-17.

12th Purdue Industrial Waste Conference, Purdue Memorial Union Bldg., Lafayette, Ind., May 13-15.

Construction Specifications Institute, annual convention, Sheraton-Park Hotel, Washington, D. C., May 13.

Rail Steel Bar Association, Broadmoor Hotel, Colorado Springs, Col., May 13-15.

American Institute of Architects, Centennial Celebration, Sheraton-Park Hotel, Washington, D. C., May 14-17.

Column Research Council, annual meeting, Lehigh University, Bethlehem, Pa., May 15-16.

Jet Age Airport Conference, ASCE Air Transport Division, Park Sheraton Hotel, New York, N. Y., May 15-17.

Society of American Military Engineers, annual meeting, Mayflower Hotel, Washington, D. C., May 20-21.

American Institute of Steel Construction, Ninth Annual Engineering Conference, Edgewater Beach Hotel, Chicago, Ill., May 27-28.

3 Differences that aren't in the policy

All Workmen's Compensation and Public Liability policies read pretty much alike. The difference shows up on the job.

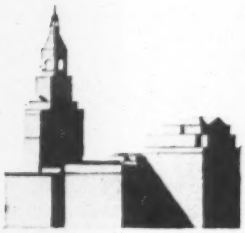
1. Effective Accident Control: When you're insured with The Travelers, expert safety engineers are available to help you prevent accidents *before* they happen. (Over the years The Travelers has spent more than $100 million on accident and fire prevention and inspection services.)

2. Prompt Claim Service: If you *do* have a claim, one of the 251 Travelers claim locations from coast to coast gives you prompt *on-the-spot* service. The burden of suits and settlements is off your shoulders. You're free to go ahead with your project.

3. Complete Employee Rehabilitation Program: The Travelers complete Employee Rehabilitation Program assures your people the best medical care. Everything that *can* be done *is* done to restore injured workers to good health.

In these days of close profit margins and greater risks, these differences are well worth considering. Call your Travelers agent or broker for full details.

The Travelers service for contractors also includes: *Contractors' Bond Service* with speed and know-how. *Contractors' Equipment Floaters* and *Builders' Risk* insurance serviced by a nationwide claim organization that can give you prompt attention anywhere.



THE TRAVELERS

INSURANCE COMPANIES, HARTFORD 15, CONNECTICUT

All forms of business and personal insurance including
Life • Accident • Group • Fire • Marine • Automobile • Casualty • Bonds

TAKE A QUICK "TOUR" through this Johnson concrete plant:

As you follow the flow of aggregates and cement through this Johnson "one-stop" plant, notice how every operation from receiving of materials to final weigh-out, is carefully coordinated for fast, accurate production:

1 **Set up here for truck delivery of aggregates, plant has 5 cu. yd. receiving hopper attached to elevator boot.**

2 **Open, inclined belt-and-bucket elevator feeds aggregates into overhead chute at rate of 90 tons an hour.**

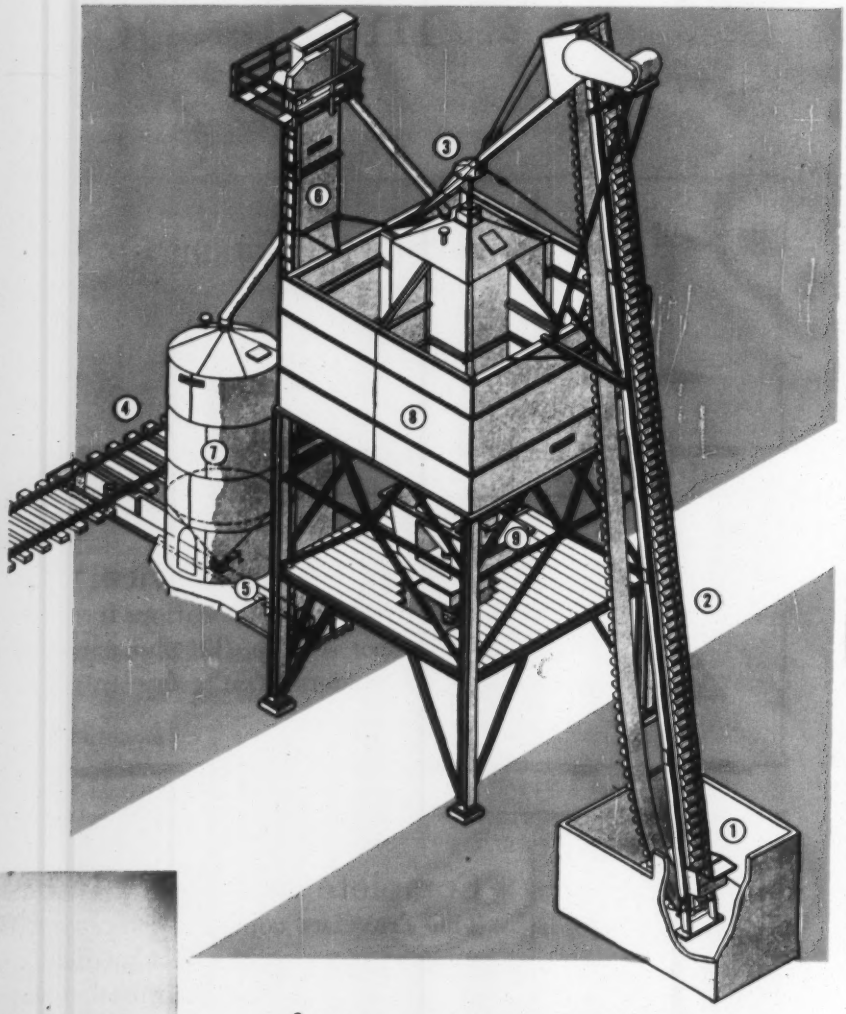
3 **Pivoted distributor (manually controlled from ground-level) directs flow of aggregates into proper bin compartment.**

4 **Canvas shrouds with car-adaptor plates unload bulk cement from hopper-bottom cars at rail siding.**

5 **Undertrack screw conveyor receives cement from rail cars, or ground storage silo, and transfers it to elevator at rate of 275 bbls. per hour.**

6 **Vertical, enclosed bucket elevator with 2-way discharge gate directs cement into dual-compartment central tank in bin or to auxiliary ground-storage silo. Gate is cable-controlled from ground. Elevator capacity: 275 bbls. per hour.**

7 **Cement silo has 470-bbl. capacity. Cement rotary plug valve at cone bottom controls flow of reclaimed cement.**



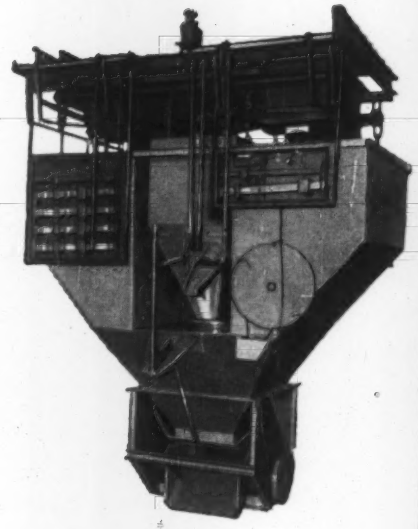
8 **Johnson prefabricated square bin has a centrally-located 270-bbl. water-tight cement tank, and can be arranged with 4, 5 or 6 aggregate compartments. Total aggregate capacity is 210 cu. yds.**

9 **Square type Concentric Multiple batcher weighs cement on a separate scale. It can be arranged for handling 4, 5 or 6 aggregates, plus 1 or 2 types of cement — has total capacity of 3 cu. yds.**

Note unique bin assembly, which consists of individual, welded sections laid together like blocks, and bolted together. Bin sections do not exceed 11′ x 11′ x 21′ for ease in handling and shipment. Total capacities: 125 to 300 cu. yds. In addition to transit-mix, this plant readily sets up for central-mix or concrete products — manual or push-button control. Want more facts? See Johnson distributor, or write us for 44-page catalog.

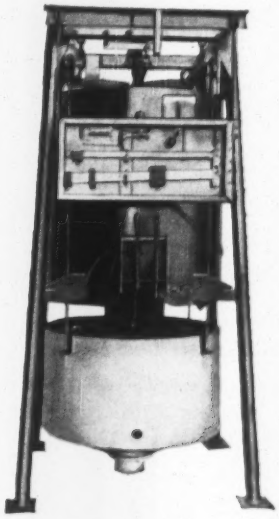
C. S. JOHNSON COMPANY

CHAMPAIGN, ILLINOIS • *(Koehring Subsidiary)* CJ834



Central cement-feed with Concentric Batcher

In this exclusive Johnson batcher, aggregates are arranged concentrically around cement. Prevents "gumming", reduces dusting, preshrinks materials. Cement is weighed on separate scale; aggregates on accumulative dial scale or on individual beam scales. Sizes from 2 to 8 yds., arranged for 2 to 8 aggregates and 1 to 4 cements. Manual, semi- or full-automatic operation.



Johnson Water Batcher

assures close quality control of concrete. Accuracy is not affected by changes in water temperature. 2 sizes: 120 gals. (1,000 lbs.) for batches up to 3 yds. — and 240 gals. (2,000 lbs.) for batches up to 6 yds. Semi- or full-automatic.

25-foot-per-minute Parsons 150 Trenchliner®

On drainage, irrigation and utility trenching, 150 wheel-type Trenchliner digs 16 to 26 inches wide, at depths to 5¾ feet. Hydraulic wheel-hoist maintains close grade tolerance. 30 digging feeds range from 12 inches to 25 feet per minute. Has square or round-bottom buckets; gumbo lips or "Tap-In" teeth; 16 or 12-inch crawlers; gas or diesel power. **Tile box and chute optional. Parsons line includes 6 other models, all sizes and types.**

PARSONS • Newton, Iowa
Division of Koehring

Light-weight fork lift has ½-ton load capacity

Kwik-Mix S-10 Moto-Bug® with fork lift weighs only 1575 lbs., works over light ramps, scaffolds, floors where heavier lift trucks can't safely travel. It lifts ½-ton load up to 6-foot height. Forks are 20 or 30 inches long, and adjustable from 6 to 32 inches wide. Tilting mast optional. Fork lift is interchangeable with 10 or 15 cu. ft. hopper, ¾-ton platform. Bigger Moto-Bug available; also concrete, plaster-mortar and bituminous mixers.

KWIK-MIX • Port Washington, Wis.
Division of Koehring

1-second gravity-dump speeds haul cycles

There's no waiting for slow-acting body-hoists on this job. Koehring Dumptor drives up, body forward — operator trips the body-release lever, and *gravity* dumps the 6-yard load instantly. Cuts 15 to 25 seconds off cycle-time. And, gravity-dump never balks — never wears out. There's no expensive hoist maintenance, replacement parts, or hoist down-time when you haul with Dumptors®. Better check what this can mean on your work.

KOEHRING DIVISION
Koehring Company
Milwaukee, Wis. A66

NOW...DRILL 9" HOLES WITH THE NEW JOY 59-BH CHAMPION

This world-famous pioneer rotary-air-blast-drill has adopted many of the features of its big brother, the Super-Heavyweight, to give you these advantages:

MORE STABLE DRILL STRING through use of round pipe . . . BETTER AIR CIRCULATION and cuttings removal . . . FASTER DRILLING—faster retraction of hydraulic feed averages total of only 3 minutes on a 51′ hole . . . EXTENDED 55′ MAST permits drilling 50′ hole without adding pipe . . . BETTER MOBILITY —hydraulically raised and lowered mast is left assembled during long moves . . . 9" HOLE allows wider hole spacing, economical use of large diameter powder.

This all adds up to new records in low cost per ton of rock. Get the whole story on the 59-BH. Write to ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.

Write for Bulletin 168-24

JOY...EQUIPMENT FOR MINING...QUARRYING...CONSTRUCTION

W&W M 6565-168

PORTABLE AND SEMI-PORTABLE AIR COMPRESSORS • ROCK DRILLS • WAGON DRILLS • DRILL BITS • BACKFILL TAMPERS • SRADERS
PAVING BREAKERS • SHEETING DRIVERS • DRIFTERS • PORTABLE HOISTS • FANS AND BLOWERS • PORTABLE SAFETY LIGHTING

Digging range: **Depth to 5'6". Width 19½" to 30".**

a new advance for heavy-duty digging . . .

Barber-Greene Wheel Ditcher

This new development is Barber-Greene's latest addition to the four outstanding ditchers in the field.

Pace-setting features include:

New digging-wheel differential and split #1 shaft assure constant gear tooth contact on both sides of wheel . . . equalize torque . . . eliminate uneven stresses.

New flexible connection between chassis and boom eliminates excessive strain, twist and tilt on curves.

New Hydra-Crowd assures optimum digging speeds through independent, finger-tip control of crowding speeds—infinitely variable without shifting gears.

New electric overload release — provides overload protection without adjustment.

New all-hydraulic spoil conveyor— instantly reversible — operates independently of wheel. Infinitely variable speed to 650 f.p.m. permits accurate placement of spoil alongside ditcher.

New hydraulic controls — including hydraulic brakes — make operation easier, more accurate.

Advance models of this new Barber-Greene ditcher have already established a reputation for superior performance under the most grueling conditions.

Write for information on this newest ditcher in the Barber-Greene line of advanced design.

57-1-D

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

THE RING TRICK

The time-honored ring trick always keeps the audience guessing, and if you like guessing games, perhaps you would like to guess how many tons of steel joint rings went into the construction of the City of Tulsa's 275,000 foot 72″ and 66″ Lock Joint Concrete Pressure Pipe water supply line. You'll find the answer concealed in the picture above.

But there's no guessing where the fabrication of these joint rings is concerned. Every ring used in the making of Lock Joint's flexible, self-centering and completely watertight Rubber and Steel Joint is carefully cut, rolled and welded. Then, to assure absolute roundness and exact diameter, every ring is sized on an hydraulic press to such close tolerances that any spigot ring will fit perfectly within any bell ring of like nominal diameter. This is only one of the many quality control measures which go into every phase of the manufacture of LOCK JOINT CONCRETE PRESSURE PIPE, to assure to the customer the highest type pressure pipe obtainable.

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East Orange, New Jersey

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Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

CAN'T SAY NO, CAN'T SAY YES—Cloud-seeding might "trigger" the release of rain from moisture-laden clouds. And then again, present meteorological knowledge offers "no real basis for the belief that the weather or climate of a large portion of the country can be significantly modified by cloud-seeding." These cautious remarks were part of a recent policy statement on man-made weather by the American Meteorological Society. However, they did go on record as not ruling out the possibility that some time in the future man would be able to effect large modifications of the weather.

PROFIT FROM TWO MILLS?—After operating at a loss for more than two years, the Ohio Turnpike Commission is giving serious consideration to raising its rates by $.002 per mile. According to experts, the increase, small though it seems, could advance the annual receipts for the Ohio pike by as much as $1.3 million.

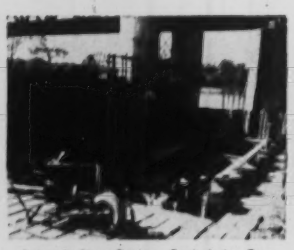
NO MATERIAL SHORTAGE HERE—The Eighth Air Force Engineers have at least one runway job under construction on which materials are no problem. The project is on Fletcher's Island in the Arctic Ocean just 100 miles from the North Pole, where, the Air Force men are "ironing out" a 5,000 ft long strip of ice for a runway. Tarpaulins are spread over the rough ice and hot air generators force warm air between the tarps and the ice. As fast as the ice melts, the canvas and the generators are moved further along and the water is permitted to refreeze, thereby producing a level surface.

CROSS-CHANNEL POWER TIE—A submarine cable to connect power grids in England and France may soon be started. Electricity authorities on both sides of the Channel think it is a good idea, and research has been under way since 1953 to establish the practicality of 130,000 volt transmission over the 26 mile distance. The big advantages in such interconnection are both daily and seasonal. Daily, France follows Britain sufficiently in its rising, eating, working habits to cause a one hour time difference to grow to a three to four hour span between peak power loads. On the seasonal basis, France has hydro while England has steam, and combined operation of the two is, of course, ideal. France could export power in the winter when water and Britain's demand are both high, then import in summer when water is low, but Britain has capacity to spare.

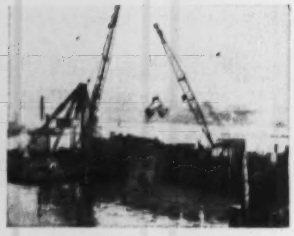
IS YOUR JOB HERE-
USING STEEL-SHEET PILING?

All these jobs moved on schedule, with no delays, no capital tie-up, no substitute lengths or sections.

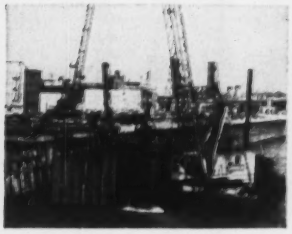
They all used the *"FOSTER PILING RENTAL PLAN"*



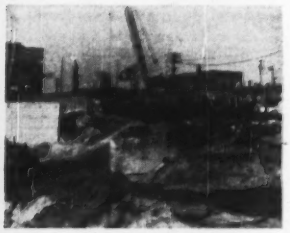
Colorado River Bridge Eagle Lake, Tex.
Bob Baker Construction Company



Penn-Lincoln Parkway Pittsburgh, Pa.
John F. Casey Company



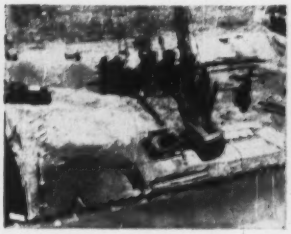
Portland Oregon Bridge
Manson Construction & Engineering Co.



Post-Tribune Building Gary, Ind.
Prosser Howells, Inc.

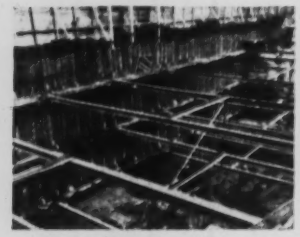
Murchison Tower Bldg. Denver, Col.
Mead and Mount Construction Co.

Boston & Maine Railroad
Grade Crossings Winchester, Mass.
C. J. Maney Construction Co.

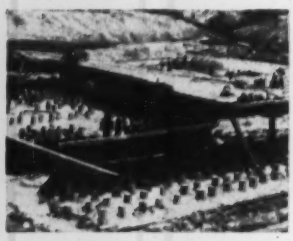


Fulton County Savings and Loan Association
Office Bldg. Atlanta, Ga.
J. A. Jones Construction Company

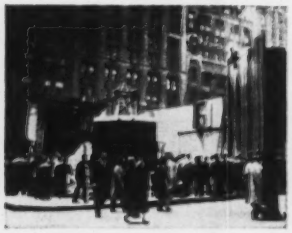
Austin Power Plant No. 2 Austin, Tex.
Brown & Root, Inc.



Mellon Square Garage Pittsburgh, Pa.
H. K. Ferguson Company
Equipment & Supplies Inc.—Sub.



Mississippi Power Co. Plant, Gulfport, Miss
Southern Services, Inc.
Boh Brothers Construction Co.



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WASHINGTON OBSERVER

- **Democrats to hammer at tight money**
- **Overtime rule won't hurt construction**
- **Federal flood insurance gets set back**

- **Democrats are going to try to make tight money their big campaign issue for next year's Congressional elections** and—if it works out—for the Presidential race in '60.

They're convinced that votes can be made by talking up the impact of short credit and high interest rates on borrowers who want homes, schools, commercial building, public works, and the like. The Democratic party bigwigs who met in Washington over the weekend charged: "Big business and the banks" are making more profits from the favorable climate in Washington while other segments suffer.

Just about every issue will be still around next year, the Democrats feel. They'll be talking about giveaways at Hells Canyon and in the atomic power program, benefits given business from fast amortization of plant and equipment, failure of lease-purchase for government buildings.

Housing legislation this year won't take away this issue. Unless starts climb up toward all-time highs, Democrats will criticize.

Democrats are counting on the construction industry to help demonstrate how tight money hurts. But it's taken as certain that in the long run Senator Byrd's committee inquiring into Administration policies won't force any loosening of credit.

Their real object is to keep the issue bouncing through next year.

- **Pentagon's new hold-down on overtime won't hit construction much.** The new order is directed mainly at aircraft companies and others in which provision is made for compensating contractors for such extra costs.

Overtime is most prevalent on construction projects outside the U. S.—those covering air bases and radar installations in the Far North, for instance. But these contracts are let under time schedules that are specifically geared to overtime pay in order to get workmen to accept poor working conditions and to get the job done during relatively short work seasons.

Within the U. S. there are few rush jobs and most contractors take account of any overtime requirements when they submit their lump sum bids.

The hold-down on overtime is part of the economy drive that resulted in some $500 million in military construction projects to be dropped from the list sent to Congress for authorization just recently.

- **Federal flood insurance got a sudden set-back when the House Appropriations Committee refused to vote a cent for the program.** It not only knocked out the $50 million President Eisenhower asked, but also a $14 million substitute sum.

The committee found the program "too indefinite and too costly," and took a dim view of the fact that roughly 40% of the premiums charged would be subsidized by the government.

The turn-down brings to a halt plans of the Flood Indemnity Administration, which was about ready to begin selling policies. All depends now on whether House and Senate go along with this particular bit of economy. Chances are fairly good.

The committee approved $325,000 to develop "a more workable plan."

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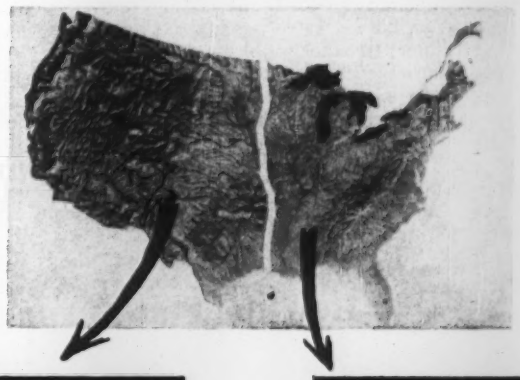


The water-conscious West . . .

. . . is putting flexibility into its basically satisfactory appropriative water right laws.

The awakening East . . .

. . . faces need for a major revamping of riparian laws to meet surging needs.

States Face Up to Water Rights Problem

Each week reports of proposed water schemes add further evidence that the U. S. is heading toward the biggest water resources construction boom in its history. But before many of the needed projects can get off the ground, numerous problems must be solved—basic ones like definition of responsibilities of all levels of government, and specific ones involving legislation of financial and administrative frameworks.

However, beclouding the whole picture is the underlying problem of water rights and priorities.

A survey of water rights laws in the 48 states conducted by ENGINEERING NEWS-RECORD indicates that almost every state needs to enact, clarify or revise its water laws. States report that rights laws are obscure, resulting in inordinate court action. A number of states still operate under the common law and have no codified statutes relative to water rights.

Half the states lack legislation pertaining to groundwater, and many make no provision for storage and transmission of water. Uncoordinated well digging is common, and unrestricted pumping has dangerously lowered groundwater tables in many areas.

Fortunately, water leaders in many states have succeeded in making state legislatures, and the constituents to a lesser degree, aware of the enormity and seriousness of the water rights problem. A few enlightened states have begun to move. More will take positive action shortly, according to the ENR survey.

I. State Activity

Some 25 of the 31 eastern states, which used to take copious water resources for granted, and all of the water-conscious western states report water study programs under way or recently completed. Twelve eastern states have recently established formal water resource commissions to do the jobs; all western states have them. Otherwise, the studies are being conducted by all manner of public, special interest and private groups.

Except for a few notable exceptions, the eastern studies have been very basic, concerned mainly with getting acquainted with water. Study activities generally consist of analyzing available resource data and investigating the workability of existing water rights laws. A few states have initiated basic data collection programs.

Western studies are generally more advanced, resulting in specific blueprints for water resource development as well as numerous water rights bills presented to state legislatures. California's grand water plan is the foremost example, but Texas and New Mexico, among others, are making notable progress.

Study findings, even in the West, almost always point out that extensive data collection and long-range appraisal of water needs are essential for truly effective water rights legislation, and following that, development legislation. And data and planning are lacking in a big way. Quite a few of the reports recommend that a single state water resources board be established to fulfill these basic needs. A number of recommendations would enlarge such a board's responsibilities to include regulatory and administrative authority for all aspects of water resources—rights, development and usage.

Typical though is the setup in Kansas where a two year old State Water Resources Board has the data collection, development blueprint and rights functions, while administrative and regulative duties remain under a number of other departments.

• **Legislation**—Only a few of the 48 states have progressed from studies to enactment of improved water rights

. . . The water rights problem: States are beginning to move

legislation. The big news in recent years has been proposals in eight eastern states that would discard the long-time riparian rights doctrine for the West's prior appropriation water rights principle. Legislation toward this end has been introduced in North Carolina, South Carolina, Georgia, Alabama, Arkansas, Mississippi, Michigan and Wisconsin. Mississippi thus far has been the only state to switch over, passing legislation in 1956.

(In brief, the riparian doctrine holds that only owners of land abutting a stream are entitled to use of the water. Prior appropriation means first in time is first in right, regardless of property location or priority of use as long as it is beneficial.)

A few other states in the East have been active in the last year or two in passing legislation to remedy obstructive aspects of riparian law:

Kentucky and Virginia defined the right to impound water during periods of excess flow (normally not mentioned in riparian statutes). During its 1957 legislative session, Indiana authorized a start on codifying drainage ditching laws and also encouraged the construction of storage reservoirs.

Iowa's house of representatives passed a lengthy water rights bill requiring any diverter of surface or groundwater except for domestic use to obtain a permit. The state senate still has to act.

Arkansas created a state agency with authority to regulate construction of dams on small streams, but defeated a bill to authorize formation of watershed districts to conserve surface waters.

A number of eastern states and 13 of the 17 western states have passed legislation and established suitable machinery to enable cooperation with the federal government's small watershed program now under way by the Soil Conservation Service of the Department of Agriculture (ENR Apr. 4, p. 21).

Western states are generally more satisfied with their prior appropriative water rights laws than the East is with its riparian doctrine. Legislative activity in the former tends toward refinement and the setting up of better administrative machinery to handle applications for appropriation.

Colorado, Nebraska, New Mexico and Wyoming each passed bills this year regulating the use of subsurface waters. Texas recently authorized its state regulatory agency, the Board of Water Engineers, to cancel portions of very early appropriations under which no water has been used in the last 10 years.

Aside from these exceptions, current state activity on water rights laws is generally in the study group stage, with early legislative action expected in a fair number of states.

II. Eastern Riparian

A closer look at the riparian and appropriative water rights doctrines, and their attendant problems, will bring the current activity into sharper focus.

Mississippi has been the only defector, thus far, from the riparian principle governing surface waters in the 31 eastern states. While prior appropriation is embraced by the 17 western states, in nine of them the riparian doctrine is still a factor.

Riparian rights, deriving from the English common law, were recognized in the East early in colonial times, when population was sparse, agriculture was the major activity and water was abundant. As it has been generally developed into codified law, the riparian doctrine accords the owner of land adjoining a stream the right to a "reasonable use" of the water which shall be "reasonably" unimpaired.

Riparian rights are proportionate; in time of low flow each landowner must curtail his consumption to protect the rights of others on the stream above and below him.

A landowner whose property does not abut a stream has no water rights at all. However, three approaches, condemna-

How the States Appraise Their Laws

Pennsylvania —

"Existing law is deficient in practically all respects. Except for municipal supplies, a conflict concerning use of surface water can be resolved only by mutual agreement or by resort to courts. Interpretation of riparian doctrine will vary considerably from court to court. Lack of groundwater use law makes it possible for groundwater aquifers to be depleted by over-pumping."

Department of Forests and Waters

New Jersey —

"The lack of control over surface diversion for consumptive use is becoming a problem, especially for the irrigation demands of the farmers and on streams where the industrial water is discharged into the trunk sewers and not returned to the stream from which it is taken."

Department of Conservation and Economic Development

Minnesota —

"Revision of statutes is needed to define public waters and to clarify the power of the state to control such waters."

Division of Waters, Dept. of Conservation

Georgia —

"Our present law contains considerable uncertainty as to the rights and duties of the users of Georgia's water resources. This uncertainty discourages investment in beneficial water use and constitutes perhaps the greatest weakness in our law as it exists."

University of Georgia
Institute of Law and Government

Alabama —

"There are no existing laws governing water rights. . . . Industry, municipality, agricultural interests and others are in complete agreement in that a study of water resources including usage is needed in this state."

Department of Public Health

North Dakota —

"At times we feel that the priority of use system could be inaugurated in the State with considerable benefits. We have situations in our State whereby some streams have been over-appropriated. The use for which the water is being employed in some cases is of relatively minor benefit. However, our priority system protects the minor benefited user in the event that his right has a priority based on time. As a consequence, municipal and agricultural uses are being curtailed."

State Water Conservation Commission

tion, prescription and special legislative action, have been employed in various states to make riparian waters more widely available.

Private water rights may be condemned by the state, or an agency thereof, by eminent domain—a right to take private property when it is in the public interest—providing that just compensation is paid to the riparians affected.

In the state of Florida, for example, municipalities and drainage and flood control districts have been delegated the right of condemnation. It is uncertain whether the same statute applies to irrigation districts, and doubtful that the large industrial water user can benefit.

When a non-riparian party openly uses water for a specified time (15 or 20 years depending on the state), he can acquire a prescriptive right to continued use. Prescription is thus actually lawful sanction of an illegal taking of water.

• **Problems**—Where water is plentiful, riparian law is usually adequate. But municipal and especially industrial and agricultural use in the East surges, as it has in recent years, deficiencies in riparian laws become increasingly apparent. Chief among criticism leveled against them are these:

Just how much water use by a riparian constitutes reasonable use is never certain, often must be settled in the courts. And once reasonable use is established, the riparian still cannot be assured how long his use can continue. What is reasonable one year may be unreasonable the next depending on stream flow.

Riparian laws generally do not encourage water resource development and conservation. Unless legislation is passed to the contrary, riparians cannot store water and streams may not be diverted from a watershed. The riparian is not obliged to conserve or beneficially use his supply. His rights cannot be lost by non-use. Finally, the needs of non-riparians are not taken into account under the doctrine.

III. The Western Doctrine

In the semi-arid western states, water has always been a cherished natural resource (it is just becoming one in the East). The water rights doctrine of prior appropriation derived from the early California miners who required large quantities of water for mining and often had to obtain it from streams far removed from their claims.

Westerners established the rule that the one who first placed water from a stream to a beneficial use had a right to continued use regardless of whether or not the user was a riparian. First in time was first in right. But such appropriative rights lapsed if the water was not used.

Local customs, judicial decisions and legislative enactments have since refined the early principles. Priorities of use have been widely adopted in the following order: domestic; stock watering; irrigation; industrial; power; and recreation. Occasionally, irrigation and industrial are reversed. All of the 17 western states except Montana have centralized state control to which application for appropriation is made.

• **Disadvantages**—The main criticism of the prior appropriation doctrine as applied is its inflexibility. Priority of use bows to time. If a stream no longer can, or never could, supply all its appropriators, the most recent users and then the lesser purposes lose out. Even worse, entire streams have been appropriated for irrigation thus restricting industrial development. In short, the first use is not necessarily the best use.

Of the nine western states that have superimposed appropriation over original riparian laws, Texas, California, Oklahoma and the Dakotas still retain a good body of riparian rights, with much peculiar difficulty as the result.

In Texas, for example, courts have held that the highest normal flow of streams belongs to riparians while the state can appropriate waters in excess of this. Main trouble here involves the definition of normal flow. And during drought conditions, when water control is needed most, it cannot be exercised.

(Continued on page 26)

Iowa—

"The Resources Council feels it is necessary, in order to cope with the problem of water rights, that a change in the basic water law of Iowa is vitally necessary."

Report of Iowa Natural Resources Council, 1950

Massachusetts—

"Study indicates that rights of groundwater and diffused surface water need further consideration by the courts and legislature. Changes in law affecting the use of water for supplemental irrigation are needed so as to eliminate hesitancy and doubt on the part of potential agricultural users who fear the possibilities of subsequent lawsuits."

Legislative Research Council

Michigan—

"We believe statutory water rights legislation will become increasingly necessary as irrigation expands. It will come about when the situation becomes acute enough to create adequate support. . . ."

Water Resources Commission

Arizona—

There are "occasional law suits over water rights. Main deficiency is that no provision has been made to require legislation of old rights acquired prior to adopted present code in 1919."

State Land Department

Kansas—

"These deficiencies [in Kansas prior appropriation laws] might be classified as (1) the need for clarification in grammar and legislative intent, (2) the need for specific administrative authority so necessary if statutory law is to result in orderly and workable operation, and (3) the need for prescribed appeal procedures."

Water Resources Board

Montana—

"Montana has about the worst law in the land pertaining to appropriating surface waters. The water rights are all filed . . . in the county wherein the right is claimed. There is no state agency where filings are to be made. The amount filed on is no indication of the amount being beneficially used. A right may be acquired by use without ever making a filing. Distribution of water is done on only adjudicated streams and this is supervised by the District Court in the county where the adjudication is filed. On streams not adjudicated there is no supervision of the distribution."

Montana State Engineer

IV. Groundwater Laws

When water follows a well-defined subterranean stream, the same rules as for surface water are usually applied. But percolating water is governed either by the English rule of absolute ownership or an American modification of reasonable use in the eastern states.

The former is most prevalent. It bestows upon a landowner an absolute right to all water beneath his land, even though he succeeds in pumping his neighbors' groundwater table, as well as his own, down.

A few eastern states, based on court decision, abide by a more moderate approach that tends to restrain a landowner from injuring the water supply of others by excessive pumping. As a whole though, the East is greatly lacking in groundwater rights statutes. The exceptions are these:

In areas where withdrawal of subsurface waters exceeds replenishment, New Jersey requires a permit for any new diversion greater than 100,000 gpd. In certain counties, New York law requires a permit for new wells whose capacity exceeds 100,000 gpd. Proper casing and plugging of oil wells to prevent salt water intrusion in fresh water zones is required in St. Louis County, Mo. Illinois statute authorizes local water districts to allocate groundwater and regulate development in certain areas. All persons who desire to construct a well in Pennsylvania must obtain licenses from the state.

Although in the West there is more widespread realization of the groundwater problem (of overdraft), rights regulation is only in slightly better shape, due primarily to lack of basic data and poor administrative machinery. Twelve of the 17 states have adopted the prior appropriation doctrine for percolating groundwater under which excessive pumping can be prevented by denying appropriations. Western states formerly abided by the English and American rules of use.

California utilizes a "correlative rights" doctrine, recognizing landowners' rights to reasonable use of water beneath their land but allowing appropriation of surplus subsurface waters.

V. The Job Ahead

Before major water rights legislation can be enacted most every state in the union must face up to the need for more and better basic hydrologic data.

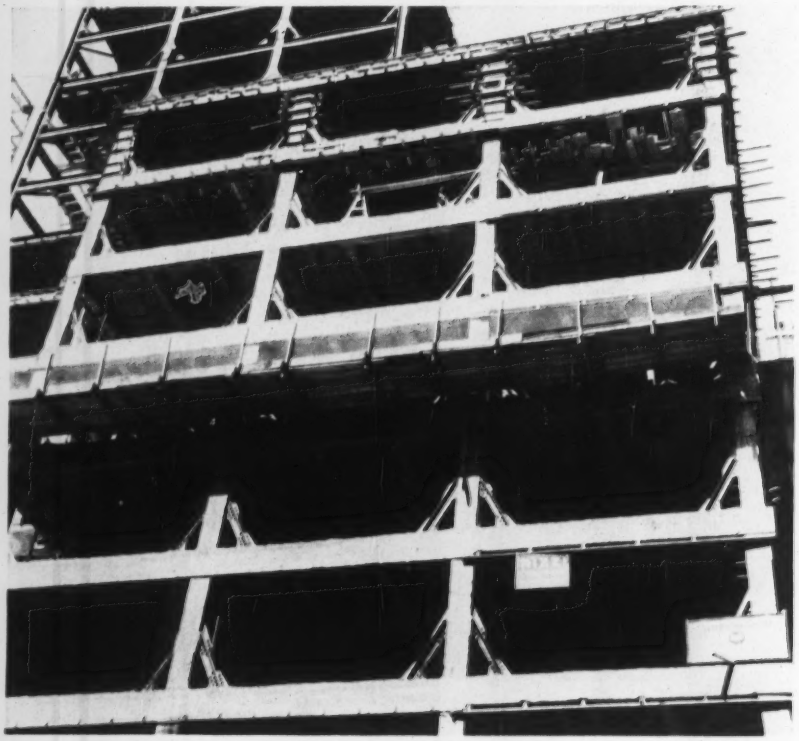
The eastern states face a major task of legislation; under present laws states have little power to promote water development and the riparian landowner has little incentive to do so.

It has been suggested that prior appropriation be adopted in the East, but most authorities feel this is not the best solution. Since riparian rights mean property rights, adoption of the western doctrine would mean compensation would have to be paid to existing riparians—an expensive and unwieldy process. Moreover, if properly applied, the riparian doctrine possesses the advantage of flexibility.

More likely course, in the view of many, is for modification of the riparian doctrine to allow excess water to be made available for appropriation. This suggests formation of water management districts that would guide development, control allocation and reduce wastage.

Despite its faults, most westerners are agreed that prior appropriation is basically sound, suited to their semi-arid country. Besides the major problem of devising laws allowing more flexible allocation of limited water supplies among competing users, the West needs to clarify a number of vague and conflicting aspects. Many states require a stronger state authority with greater control over regulation.

In both East and West, water construction legislation—having to do with financial aid to localities or water districts and with state-sponsored water projects—is much in the news, most often alongside, but sometimes ahead of, basic water rights law improvement. The danger, of course, is the undertaking of project development on a poor legal and regulatory foundation.



Knee Braces Stiffen Office Building Walls

Knee braces along the exterior and in elevator walls carry a substantial share of wind loads on the 27 story Canada House, a New York City office building now under construction (ENR Jan 17, 1957, p. 42).

Limited by architectural and mechanical considerations to shallow floor beams of 14 in. depth incapable of carrying the load through ordinary wind connections, the designers turned to knee bracing. The braces were angled steeply at the lower junctions of spandrel beams, and columns to prevent interference with windows.

Reinforced at the bottom with No. 8 bars, the concrete fireproofing around the spandrel beams acts in effect, as if it were haunched, to help the beams resist bending.

The building has setbacks at two levels. Shear from the upper portions of the building is transferred to the outer columns of the lower portion by horizontal bracing in the floors at these levels.

Vertical limestone "fins" will be incorporated in the facade to emphasize the vertical lines of the tower.

Severud-Elstad-Krueger are the structural engineers. Eggers & Higgins are the architects. Walsh Construction Co. is the general contractor, and American Bridge Co. is erecting the steel.

Congress Hones Budget Ax But No Big Cuts Are Due

Construction programs are under sharp attack from a Congress that's convinced that economy—budget-cutting—is good politics this year.

But the headlines about savings being made generally exaggerate the amount of the cuts—and construction programs demonstrate this clearly.

This week Congress received the biggest bundle of construction projects of them all: the military construction authorization bill, covering requests for the Army, Navy, and Air Force bases and housing. The total asked to be approved by the Military Committees of House and Senate: $1.5 billion.

This total sent to Congress is a sharp reduction from the more than $2 billion that the services themselves wanted to request.

However, this sharp cutback won't produce a similar-size reduction in spending.

The reason is clear—much of the spending for next year is to complete programs already under way; cutting back on new starts needn't have much immediate effect.

In other fields however, the economy drive has a real bite.

Federal aid for building school classrooms—which could run as high as a couple of billions over a five year period—is particularly vulnerable. It's big money, it's a big controversy over segregation, and it's new.

Even Republican leaders who would otherwise go along with the Administration on such an issue are almost sure to vote against the school aid bill as part of a general position against "new starts."

The "anti-new starts" attitude is particularly effective also against such public works projects as rivers and harbors, reclamation, flood control and the like. Texas floods provide ammunition for the proponents of federal water control development programs, but their special leverage on legislation diminishes rather quickly.

On the other hand, the housing industry is almost certain to get favorable legislative action. An omnibus housing bill covering many government housing programs is sure to be passed and to get Eisenhower's signature.

The bill authorizing rivers, harbors and flood control projects may be running into trouble again. Eisenhower vetoed the bill last year because logrolling in Congress added to his requested list some 42 projects not approved by the Army Engineers. The bill that passed the Senate before Easter includes about 20 projects not yet on the Engineers' approved list.

	Proposal	*Outlook*
Military	Authorize $1.9 billion of bases, buildings, docks, housing, etc	Congress will cut this some; Air Force will be hit least
Schools	Put hundreds of millions of federal funds into state class-room building programs	Budget-cutting target number one; not likely to get through this year
Housing	15 bills being considered to boost mortgage buying authority of FNMA, help urban renewal, college housing, lower down payments on new homes, provide for GI housing, etc	Chances are good for passage of some kind of legislation.
Niagara Power	$600 million plant needed to rebuild one destroyed by rockslide a year ago	Public vs. private power fight may keep legislation bottled up
Fryingpan-Arkansas	Use $160 million of federal funds to divert Fryingpan river water over Colorado Divide into Arkansas River	Approved by Senate Interior Committee but chances look poor in view of earlier failures to win House approval after Senate ok'd it
Trinity River	Interior Dept. has recommended private development of water power; construction of dam lagging from lack of funds	Budget cutting again is key factor running against those favoring federal power
Hells Canyon	Legislate federal high dam to replace low dams already being built by private utilities	Odds are very much against public power bloc in this fight
San Luis	$280 million irrigation project for Central Valley of California	Scarcely any chance in view of strong trend against "new starts"
Rivers and Harbors	$1.5 billion authorization has already passed the Senate	Bill still contains projects not approved by Army Engineers — the reason Eisenhower vetoed this bill last year
Highways	Congress mainly checking program—extension of interstate mileage, billboard regulation, relocating utilities etc	No legislation expected to pass this year
Taft-Hartley	Permit pre-hire contracts in unionized areas, legalize multi-employer bargaining associations, and bring apprentice training under bargaining	The racketeering exposes have killed any chance of Congressional action this year
Pollution	Continue $50 million a year grants to cities for helping to finance treatment plants	Very good chance since House finally approved the appropriation
Bid Shopping	Require prime contractors to list names of major subcontractors who would perform on a federal job	House committee has approved, fair chance Congress will approve this year, mainly because general contractors no longer opposed

World Reclamationists Expand Scope

International Commission on Irrigation and Drainage adds flood control to its field of interest and its name

Engineers from all parts of the world met in San Francisco last week at the Third Congress of the International Commission on Irrigation and Drainage. The 500 in attendance—about half from outside the U. S.—learned that the function of the commission was being expanded to include flood control, heard discussions on such subjects as canal linings and hydraulic structures, welcomed U. S. Reclamation Commissioner W. A. Dexheimer as president-elect of the group and looked forward to the next session in 1960 in Spain.

Almost all international conflicts were ignored during the meetings except that the delegation from the U.S.S.R. was prevented from inspecting California irrigation and hydroelectric works in a post session tour. The action of the U. S. State Department in limiting the Russian's visas was presumably aimed at getting some form of reciprocal tour privileges in Russia for U. S. engineers.

Addition of flood control to the scope of the group was announced by Commission President Hamad Suleiman of Egypt. Specifically excepted from the enlarged functions of the commission are the design and construction of large dams, also navigation and basic hydrology, since these matters are already included in the scope of other international bodies. Thus, the seven-year-old commission now becomes the International Commission on Irrigation, Flood Control and Drainage.

In addressing the congress, President Suleiman cited growth of the group since its first meeting in New Delhi in 1951 with 11 countries as members. The second congress was in Algiers in 1954. Four countries—British Guiana, Czechoslovakia, the Philippines and Poland—were added to the commission at San Francisco bringing the membership to 37. Participation in the technical work of the group is good according to Mr. Suleiman. The third congress considered 97 reports and 11 communications from 21 countries.

Importance of irrigation was emphasized by Mr. Suleiman because of the world food need as well as inadequacy of water supply or lack of water control in many countries. He called the 20th Century the "Century of Irrigation," pointing out that only 100 million acres were irrigated in 1900 as compared with 300 million acres in 1955. And he predicted irrigation of 500 million acres by 2000.

In the keynote address, U. S. Reclamation Commissioner W. A. Dexheimer also cited the food shortage in many parts of the world. He pointed to the 50,000 daily gain in world population as compelling reason to use land and water efficiently. And he said that control, channelization and conservation of flood waters are important in over-all planning for irrigation. Dexheimer cited loss of irrigation water through inefficient canals and distribution systems and pointed out that irrigationists must find economical means of reducing these losses.

Some of the technical sessions were directed at the canal loss problem. For example, an entire day was spent in discussion of 20 papers on canal linings. Most of the papers dealt with design and construction of various lining types, however, and only a few were directed at means of selecting linings or lining maintenance. It was apparent that many miles of irrigation canals are unlined or make use of natural soils. A Russian paper by G. T. Dadayev cited advantages of compacting natural soils in place without excavating—the objective is to use natural soil particle bond for greater strength. An important research work on canal sealing with colloidal clay sediments was covered in a paper by R. D. Dirmeyer, Jr., of the Colorado A and M Research Foundation. Colloidal clay sediments are carried into place within previous soils by canal loss water. The method appears to be particularly effective on sandy soils; not so good in fractured rock. Installation costs commonly have been less than the value of the water saved in the first season.

Control equipment for distribution works is also a valuable means of preventing water wastage as was brought out in discussions and papers at another full day session on hydraulic equipment. Three French engineers—R. Bouillot, G. Combes and P. Marx—described a downstream control system that prevents wastage. Reserves are stored in canals for user demand. Automatic equipment controls such as dual control gates permit floods to pass without the canals overflowing. Such control devices must operate correctly over a wide range of discharges and heads according to a presentation of C. W. Thomas of the USBR. And control devices are dependent on measurements of water. Thomas outlined many gaging devices available for use in distribution systems, but pointed out care in selection is necessary for the capacity and service intended.

Bay Bridge Capacity to Be Raised

A $35 million, four year plan to remove interurban transit tracks from the lower deck of the San Francisco-Oakland Bay Bridge and convert the lower deck to motor vehicle operation has been recommended to the California legislature.

Under the proposal, each deck would become a five lane, one-way-traffic operation.

The plan would increase capacity of the bridge by 25 to 35%. Average daily traffic at present is approaching 100,000 vehicles, according to Norman G. C. Raab, projects engineer for the Division of San Francisco Bay Toll Crossings. Mr. Raab's report was financed by a $50,000 grant from the legislature last January in preparation for proposed abandonment of rail service across the bridge by the Key System, operator of the interurban line.

The study was necessary to clear the way for financing of a proposed southern crossing of the bay, which would draw on earnings of both the existing and new bridges for revenue bond repayment.

Under the proposal, $10 million would be spent in the first year to remove rails and repave the lower decks, the area being redecked with precast, lightweight concrete. In the second year, another $10 million would be spent to convert the San Francisco Key Terminal for bus use, to take loading operations off the city streets.

For a third $10 million—in the third year—additional approaches could be built to the lower deck and traffic lights added to change the flow of two-way traffic on the five lanes to conform with peak load demands.

Fourth year construction would reinforce the upper deck to accommodate commercial traffic in five 11.6 ft lanes of one-way traffic. The six upper deck lanes now in use are only 9½ ft wide.

The report recommended pay-as-you go financing for the conversion, partly from the bridge revenue funds and partly from tolls collected during the reconstruction. It was pointed out that the 20-year-old bridge is well able to pay for the conversion, since it will be completely paid for by June 30 of this year, leaving an estimated bridge revenue fund balance of $15.7 million.

LOCAL DAMS such as Mansfield (above) on Texas' Colorado River and federal structures confine $58 million damage to rural areas, prevent $100 million more.

Texas Floods Ease Water Plight

By this Monday, the worst of two weeks of major flooding of all rivers in east and central Texas appeared to have passed. As the sun shone brightly after 18 days of heavy rain and flood waters were ebbing, Texans seemed to be concentrating more on the brighter aspects of the floods than on some $30 million worth of damage.

A seven year drought has been broken. Surface and shallow subsurface water supplies have been replenished and planned water conservation and flood control projects have obtained more widespread support.

Since last week's report (ENR May 2, p. 23), the Sabine and Red Rivers joined the Trinity, Brazos, Colorado and Guadalupe Rivers in flood. As of Monday, water in the Colorado and Guadalupe had receded, crests in the Trinity and Brazos were at the Gulf coastline, a second crest in the Sabine had several days to go but was not of record proportions and only in the lower Red River in Louisiana was additional damage expected.

Preliminary estimates made through May 6 by the Corps of Engineers Southwestern Division office in Dallas pegged flood damage in the division's area at $57.5 million. This includes parts of Oklahoma, Arkansas and Louisiana. Damage prevented by flood control installations ran to $100 million; damage that would have been prevented by proposed and authorized dams was estimated at $33 million.

Worst hit basins were the Brazos, Trinity and Sabine. The Corps estimated damage in the Brazos watershed at more than $13 million, with damage prevented at $14 million. Two federal reservoirs, at Whitney and Belton, were credited. At Waco, the Brazos crested at 29 ft, compared to the record 41 ft in 1936.

Trinity Basin figures remained as reported last week, $7 million damage and $65 million prevented. Six fairly recent federal projects, Bendbrook, Grapevine, Garza-Little Elm and Lavon reservoirs and the Fort Worth and Dallas floodways, saved the day and more than their total first cost of $61 million. Without flood control, Trinity River flow would have been 141,000 cfs, second only to the record 184,000 cfs at the Dallas floodgates in 1908.

No damage or flow figures were available for the Sabine River. It is an almost unprotected stream which last week caused flood damage in the millions in low-lying farms and oil fields.

A string of dams above Austin built by the Lower Colorado River Authority kept the Colorado in complete check. The Army Engineers' big Lake Texoma on the Red River along the Oklahoma-Texas border kept flood waters in check above the dam (Dennison), but flash flooding of tributaries to the lower Red caused many millions of dollars of damage in Oklahoma, Arkansas, Louisiana.

Further north, federal reservoirs in the Arkansas and White River Basins kept the river down to the "minor" flood stage.

Although flood damage in Texas totaled some $30 million, it was suffered mainly by widely scattered agricultural lands, was not of the concentrated catastrophic type. Thus, many Texans could look to the brighter side.

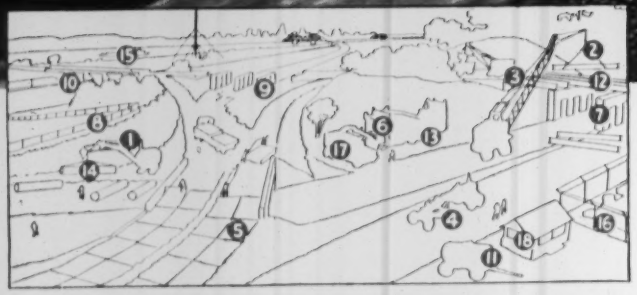
Water-short Dallas is now water-plenty Dallas, with her reservoirs filled with a 5 year supply, even allowing for evaporation and consumption increase. Thus far this year 26 in. of rain has fallen on Dallas County, compared to 22 in. during all of last year.

Agencies drawing water from shallow groundwater sources have been helped tremendously, says R. M. Dixon, Chairman of the Texas Board of Water Engineers. Replenishment of groundwater tables to pre-drought levels will take many months of abnormal rainfall.

Marvin C. Nichols, Fort Worth consulting engineer, in reply to a query by ENR opined that long-range water projects would continue without interruption as a result of the floods. He had high praise for flood control planning on the Trinity, Brazos and Colorado Rivers, but called planning for the Sabine deficient.

Even Gov. Price Daniel said: "While floods have been so serious in some parts of Texas that federal assistance was necessary to supplement state and local efforts, the state will undoubtedly derive long-range benefits from the heavy rainfall. The floods also served as a reminder to all of us that a statewide water conservation and development program is long overdue."

There is no information forthcoming Son the effectiveness of some early projects under the upstream flood control program of the Soil Conservation Service, but it was generally held that the previous two weeks' floods were not the kind suitable to such control. Regardless, ventured one reliable non-federal source, it is probable that local soil conservation interests will use the recent floods for a propaganda effort.



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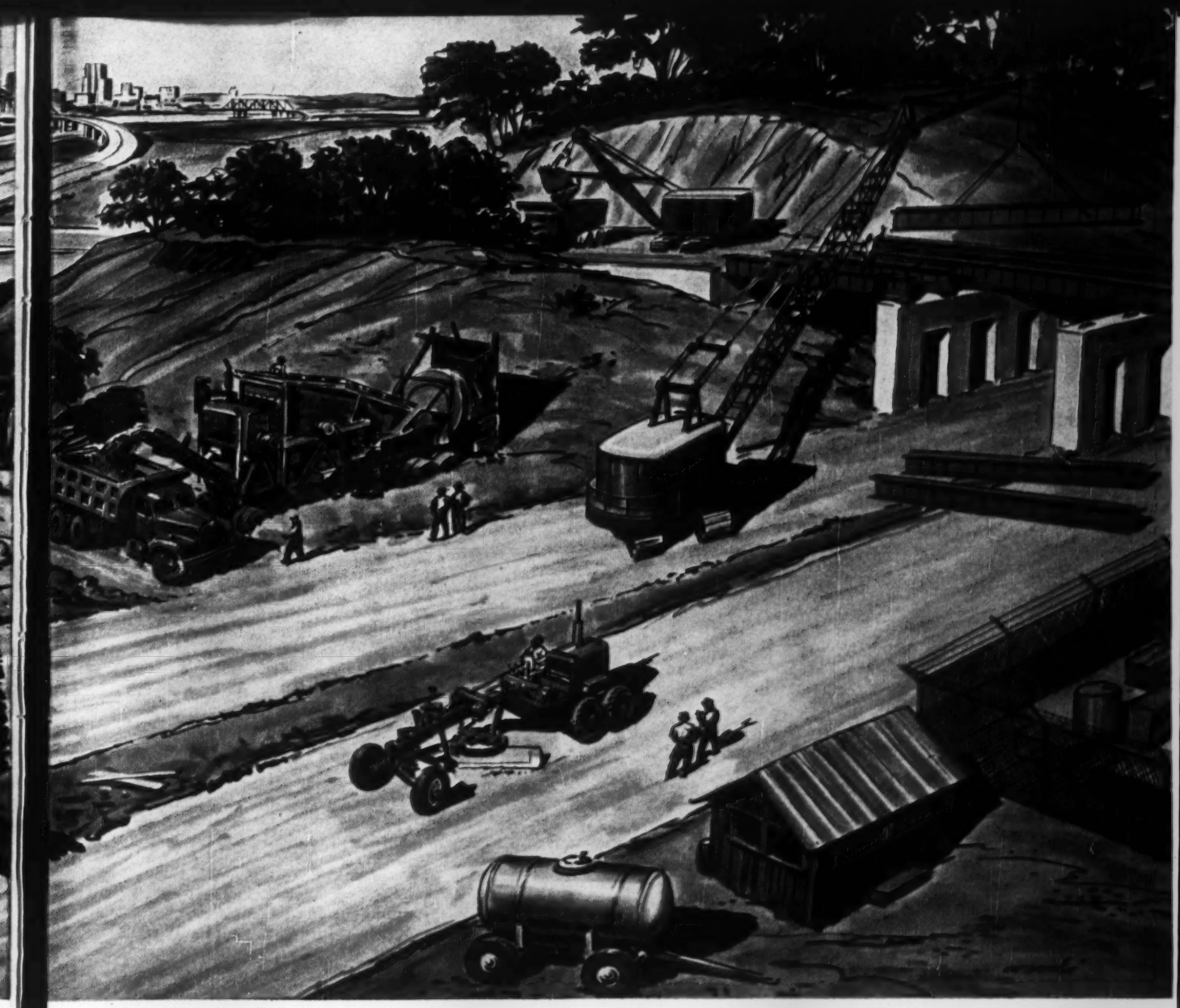

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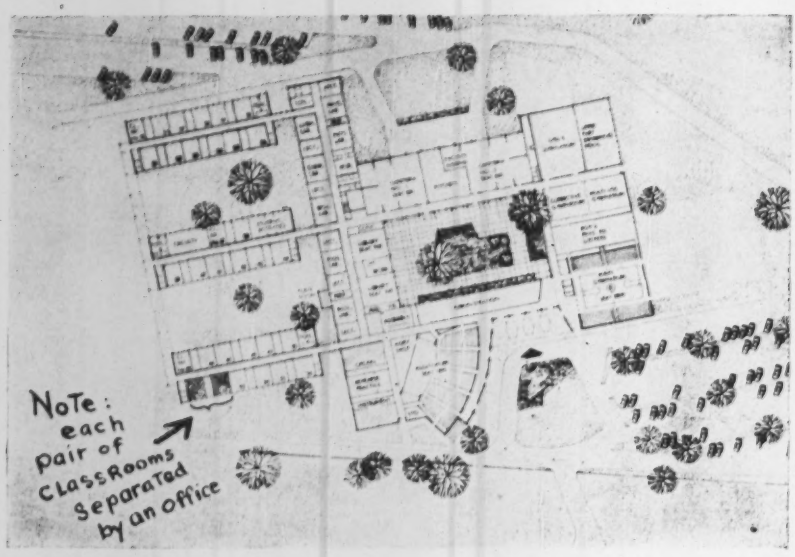
High School Holds More Pupils in . . .



. . . New-Type Layout With Paired Classrooms

An $8.2 million senior high school, proposed for construction next year in New Rochelle, N. Y., will have paired classrooms, a new concept in school design. Two classrooms of identical size, separated by a teacher office-work room, are considered as the basic unit.

Originated by Donald K. Philips, superintendent of schools at New Rochelle, the paired classroom unit is designed to increase classroom utilization by one-third.

Three teachers will work from the office separating the two classrooms. Since a teacher is free for 3 periods in an 8-period school day, classrooms normally would be in use only five-eighths of the day. With the paired classrooms and office, three teachers cover 15 of the 16 study periods held in the two classrooms.

Each classroom is 24 x 30 ft, and the offices are 12 x 30 ft. Should the need develop in the future for a larger classroom, laboratory or other large space, the elimination of a non-bearing partition converts a classroom from 24 x 30 ft to 36 x 30 ft.

The almost continuous use of the classrooms under this new system make them unavailable for study hall use. This problem is met by the special design of the two 500-seat cafeterias in the school. Folding partitions close off six small areas in each of the cafeterias to provide twelve homeroom and study hall groups of up to fifty students each. These spaces are usable during the first three and last two periods of each day. During the three lunch periods, classrooms will be available for study hall use.

The school will contain 31 pairs of classrooms. With one teacher per classroom the school will handle 2,400 students. Over 3,000 will be accommodated when three teachers are assigned to each two classrooms.

Eggers and Higgins are the architects.

Scholarships

Industry ups merit awards for high school graduates

The National Merit Scholarship Corporation, through which individual business organizations are enabled to provide four-year college scholarships to deserving secondary school graduates, announced last week the names of 830 young people who have won awards under next year's program. During the current year, which marked the beginning of the plan, 556 students were in the 160 colleges and universities of their choice under Merit Scholarships. A total of 23% were studying engineering and 1% architecture; 29% were heading for a career in research and 17% had teaching in view.

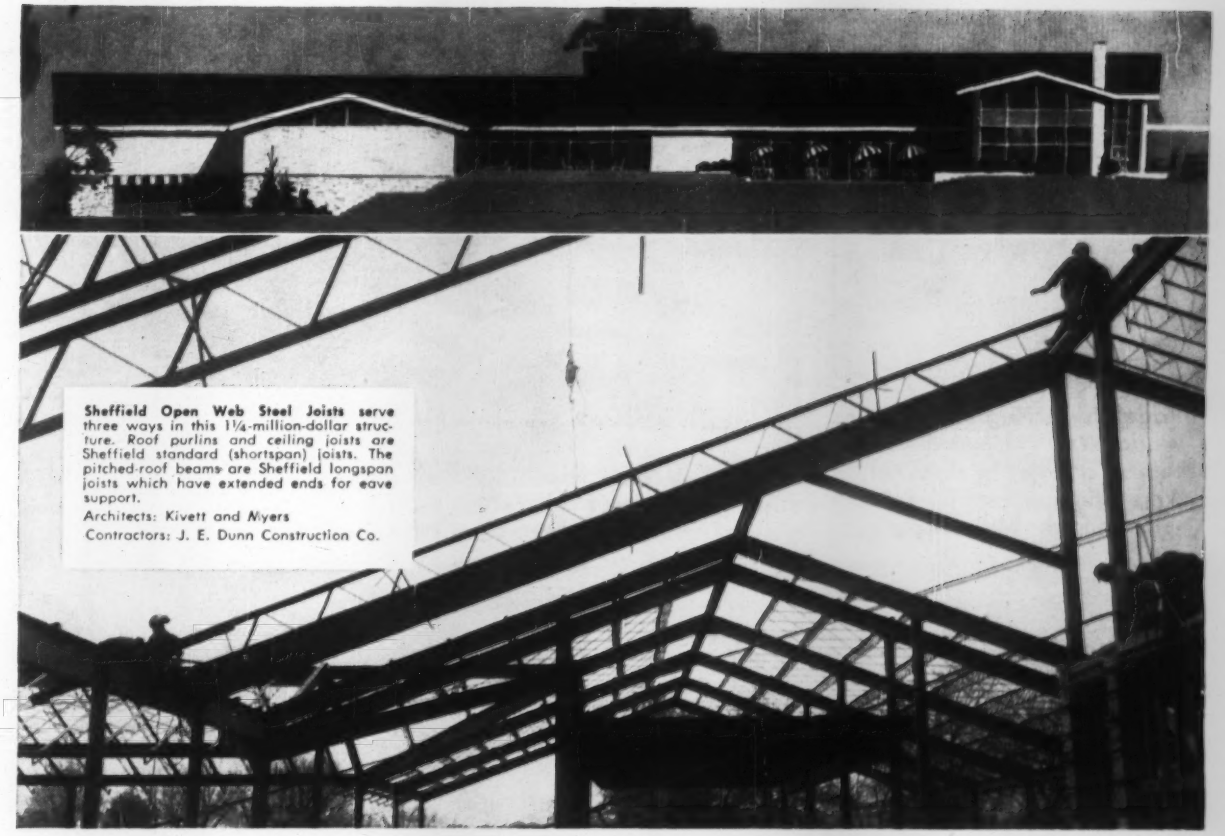
To date nearly 60 organizations have established scholarships under the plan, among them the McGraw-Hill Publishing Co., ENGINEERING NEWS-RECORD's parent company, which supported 10 scholarships this year and will support 15 next year. Other organizations allied with the construction industry who are participants include the Cummins Engine Foundation, International Nickel Co., Phelps Dodge Foundation, Pittsburgh Plate Glass Foundation, Weyerhaeuser Timber Foundation, B. F. Goodrich Foundation, Standard Oil Foundation, and the Association of Iron and Steel Engineers.

Basic financing for the National Merit Scholarship Corporation comes from the Ford Foundation and the Carnegie Corporation of New York, which have provided $2.5 million to cover administrative expenses for 10 years. In addition the Ford Foundation has appropriated $1 million a year for 10 years for a continuing scholarship program, and is prepared to finance additional scholarships up to a total of $8 million to match industry scholarships.

Of the 556 scholarships awarded last year, 195 were provided by industry, 195 were provided by matching funds from NMSC, and 166 were provided by NMSC in its basic program.

Students from any secondary school in the country are eligible to take the competitive examination for the scholarships. About 58,000 participated the first year and 162,000 the second year. Payments to winners are based on need, and vary from $100 up to the full amount of tuition and expenses. Students may elect any accredited institution and any desired course of study.

Since tuition generally pays about half the cost of education, a supplementary grant is made by the NMSC to privately supported institutions equal to tuition. All of the money contributed by business corporations goes into scholarships.



Sheffield Open Web Steel Joists serve three ways in this 1¼-million-dollar structure. Roof purlins and ceiling joists are Sheffield standard (shortspan) joists. The pitched-roof beams are Sheffield longspan joists which have extended ends for eave support.

Architects: Kivett and Myers

Contractors: J. E. Dunn Construction Co.

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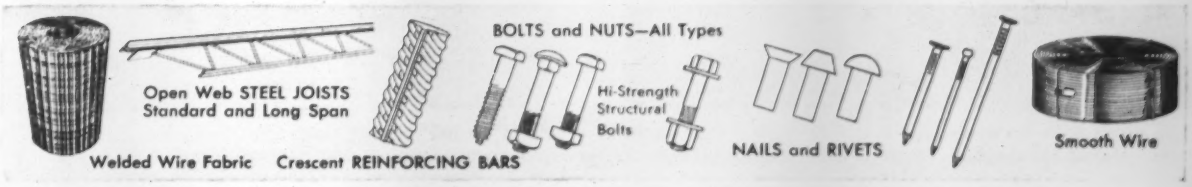

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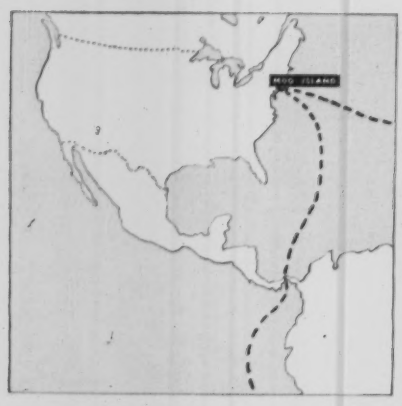
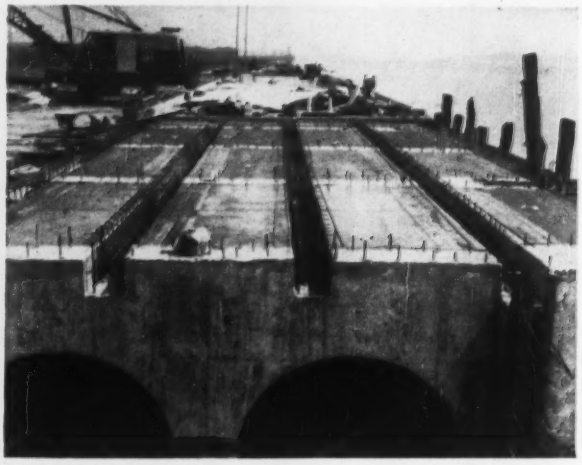


Philadelphia's Hog Island—once a World War I shipyard—is now becoming a major terminal for oil tankers bringing fuel from South America and the Middle East.

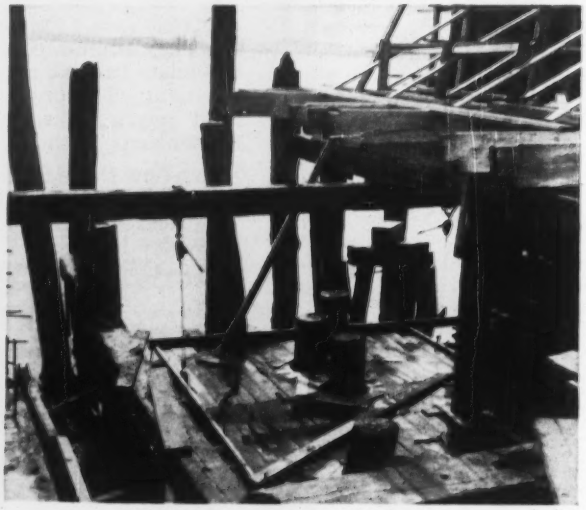
BUILT AND REBUILT in two wartime periods, old wharf timbers rotted away, presented a constant repair problem, safety hazard, for oil operations.

NEW AND OLD stand together as contractor uses old wharf as operations site, builds new reinforced concrete facility.



BARREL ARCHES, standing on newly placed pile caps, form deck of rebuilt oil facility.

PILE BENT to be incorporated in new dock (center) after cut-off, stands clear of old decking. Bents on either side support forms.



IN DRY — and without cofferdams—contractor has built form directly over piling, suspending it from bents on either side.

Economical Oil Wharf

Contractor ingenuity that makes use of every possible advantage of an existing situation—plus engineering design flexible enough to be adapted both to the contractor's and the owner's needs—have been combined to produce a major waterside oil terminal in Philadelphia, fast and at low cost.

The job is the complete conversion of Gulf Oil Corp.'s 3,600 ft long wooden wharf at Hog Island, on the Delaware River below Philadelphia, into a reinforced concrete structure capable of handling the biggest tankers that can use the Delaware River channel.

It is being done at a cost of just under $5 million. At that price, Horn Construction Co. of Merrick, N. Y., was nearly $2 million under the high bidder, substantially below the second-low bidder. The contractor based his bid on his gamble that he could work the job completely from the shore side, use no marine equipment and work without using cofferdams.

The gamble has paid off. The job is on schedule both profit-wise and time-wise. And that's in spite of the fact that the wharf is in constant use by tankers carrying crude oil from Venezuelan and Kuwait fields, discharging their cargoes into pipelines that carry it to Gulf's Darby Creek tank farm, from which it is later pumped to the East's largest refinery on the Schuylkill River, five miles away.

• Problem wharf—When it called in the New York consulting firm of Tippetts, Abbett, McCarthy & Stratton to advise on what should be done to make the wharf safe and adequate for the company's present and future needs, Gulf had several problems to present.

One of these concerned the structure itself—and that, in turn, involves its history. Hog Island's 95 desolate, swampy acres sprang into national attention only once in recorded history—in the hectic days of World War I, when it was converted (at a cost of $140 million) into a tremendous shipyard that at its peak had 50 shipways in operation and produced a new freighter every 28 working days. Shut down in 1921, the yards, wharves and seven piers rotted into ruins until early in World War II, when the present wharf was rebuilt, partly on some of the old piles, and used as an ammunition loading area.

That rebuilding job consisted of driving new piles—many of them untreated—re-decking and paving an area 3,600 ft long by 160 ft wide between the land's edge and what had been the outer side of an old shipway, construction of two warehouse sheds and installation of a railroad siding. Ammunition was stored on the open wasteland of the "island" (long since joined to the mainland by fill).

At the end of the war, the facility—and some 20 acres of land behind it—was leased to Gulf by the City of Philadelphia.

The old piles and timber presented a constant repair problem – particularly where untreated wood had been used in the haste of war construction. And, of course, the fact that the wharf was of wood was a problem in view of the highly inflammable cargos of the ships using it.

A second problem was that of the future, when tankers of several times the present capacity—up to 60,000 tons—might take advantage of the 40 ft (mlw) water depth at Hog Island.

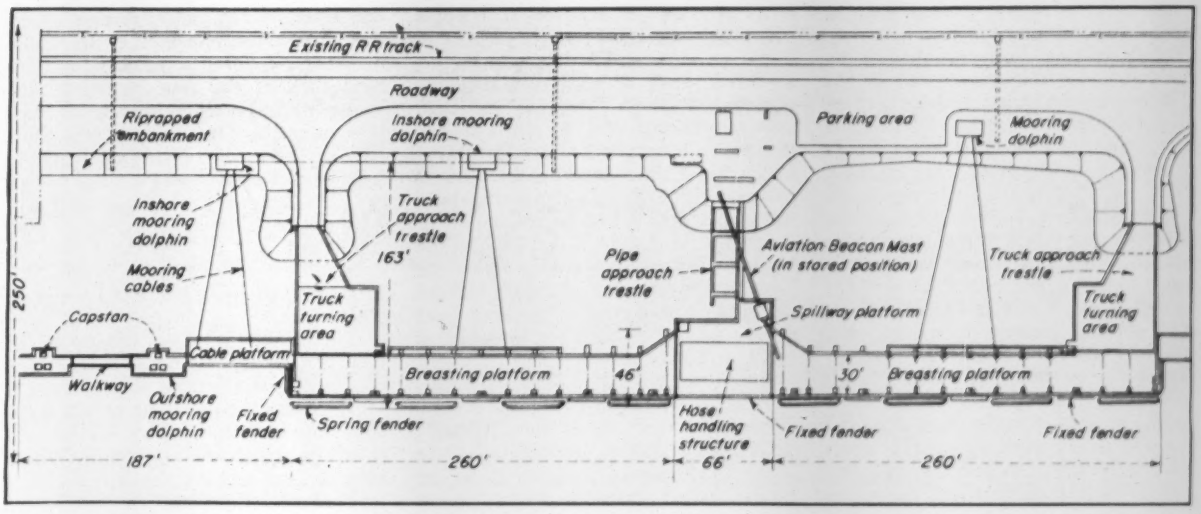
A special problem was that of mooring arrangements to make possible holding the big ships to the wharf without constant adjustment of mooring lines during unloading, when a ship may rise as much as 30 ft from its full-cargo draft. A corollary was planning some system of hose attachments that would permit continuous unloading without constant readjustment of heavy, expensive hose lines.

And an overriding consideration was how to do the work while the wharf continued in uninterrupted operation. The oil company handles an average of 7.2 million gallons of crude oil daily at the facility, couldn't afford to interrupt that flow.

• Design answers—First answer, dictated by safety and future maintenance considerations, was to convert the dock to a reinforced concrete structure above the waterline.

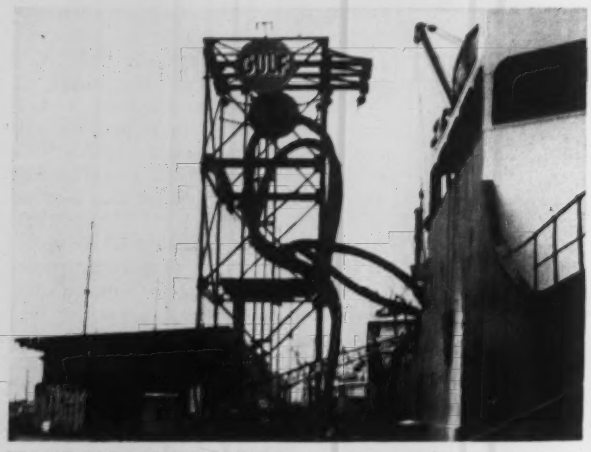
This could be done at reasonable cost, said the engineers, since most of the existing piling was sound below the low water line, and could be cut off and used as support for the rebuilt structure. Very little additional piling would have to be driven—even though incorporation of the old sticks might present some problem, since the driving patterns more closely resembled a shotgun pellet pattern than a carefully drawn pile driving plan.

Additionally, the oil company didn't need the full 160 ft width of the wharf, since the only activity is unloading of oil, plus some minor truck loading of ships' supplies and some supplies for overseas bases. So less than half the

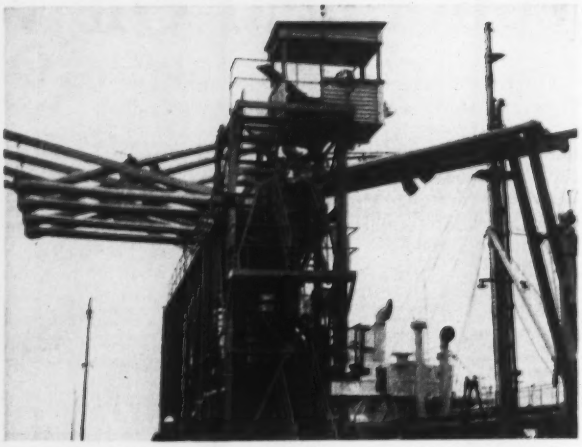


PARTIAL PLAN VIEW shows extent of work at each of four berths planned for facility. Hose handling structure is independent of breasting platforms, so as to be unaffected by movement.

Oil Facility Incorporates New Features . . .



STANDARD INSTALLATION for taking off ships' oil cargoes is this structure, mounting heavy rubber hoses.



NEWEST IDEA is this nest of aluminum pipe, handled automatically and automatically adjustable to change in ship position.

width of the old wharf (actually 66 ft) need be included in the new work.

To save concrete, time and weight, the new deck could be carried on a series of barrel arches, paralleling the pile bents extending outward from the shore.

Also to save materials, not even the full 66 ft new width of the wharf was necessary, except at places where the ship would actually rest against the structure. Here, the engineers took into consideration the fact that tankers are tied up broadside—"breasted" in sea terminology—against the wharf. And since the piping systems used for unloading must be permanently fixed, the ships must be always brought into the same spot. In addition, the portion of the side of the ship that is not curved (either toward the bow or stern) is roughly only one-third of the total length. Hence, it is not necessary to provide fendering for the full length of the facility, nor is a long straight outside edge necessary.

Result of this consideration is a design calling for four permanent berths or breasting platforms (of which three will be built immediately), each 580 ft long, against which the tankers are to be moored. Only these areas are built to the full 30 ft width. The remainder of the wharf is further reduced, to widths varying down to 6 ft, where it is only necessary for men to walk in securing mooring lines.

Further, the breasting areas are being built as independent structures, not physically connected to the mooring dolphins or to the areas where unloading facilities are housed, so that any movement caused by the weight of the ship will not disturb the entire structure. End result of this design is a somewhat scalloped effect from the water side, with the breasting platforms and unloading stations apparently projecting into the river beyond the other sections.

• **Unloading and mooring**—Big problem with mooring a tanker, sailors say, is the ship's rise as it is unloaded. This leaves the crew the alternative of mooring with extremely slack lines, so that the lines need not be adjusted as the ship rises, or of making constant adjustments over an extended period. Too much slack permits the vessel to drift away from the wharf—a constant danger at Hog Island where prevailing winds are offshore, and the river current is swift when the 4 to 5 ft tide is ebbing.

Result of improper mooring may be damage to the ship or the wharf or both, and also damage to the expensive, heavy rubber hoses (up to 8 in. in dia) used to connect the ship's pumps to shore pipelines. (How large an item this can be may be drawn from the fact that such hoses cost $40 or more per linear ft, and four or more hoses, up to 100 ft in length, may be used in a single unloading operation.)

For an answer, TAMS engineers designed a series of reinforced concrete mooring dolphins, standing on their own pile foundations, as much as 190 ft inshore from the water edge of the wharf. From these dolphins extend steel cables, which are hooked by the ships' own lines for the principal mooring. The long radius thus provided, plus the natural slack in the cables, makes it possible for the ship to rise without adjustment of its lines. Mooring lines at bow and stern need not be made so short as to require major adjustment.

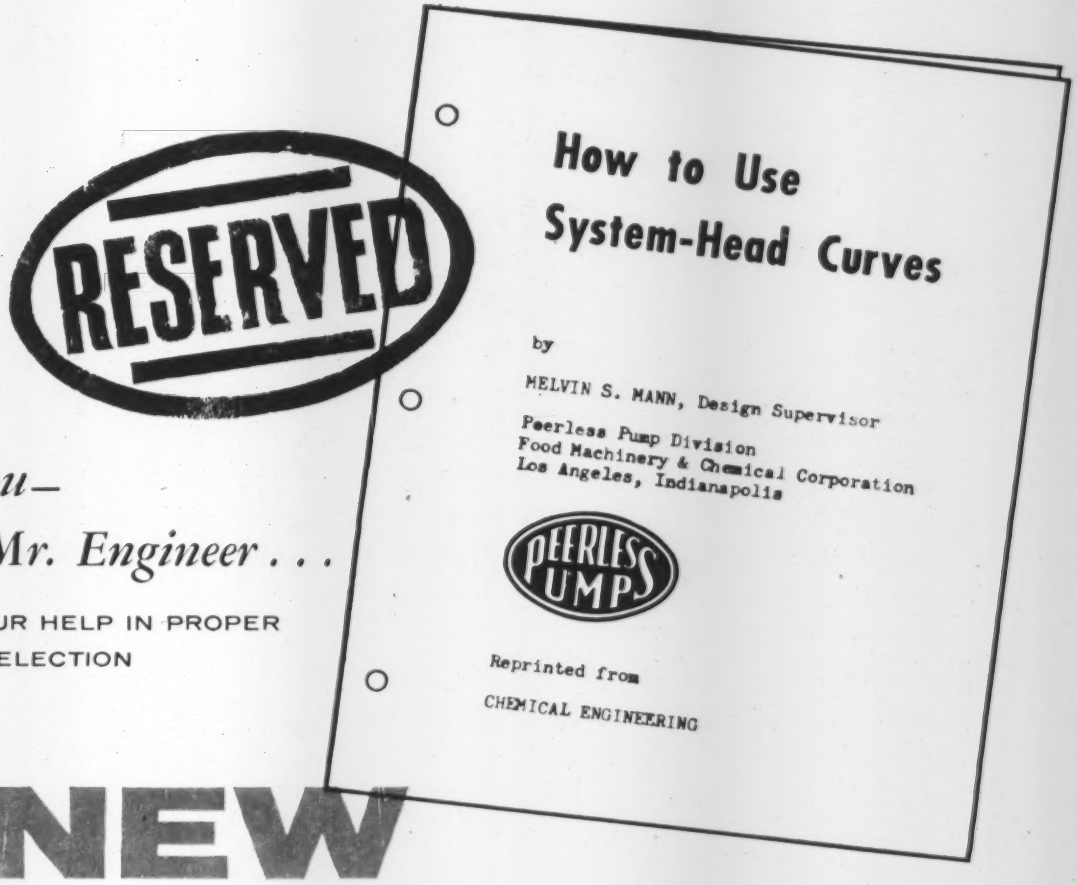
On the oil unloading facilities, Gulf's own engineers decided to adopt a comparatively new system—the patented "Chicksan" system, which utilizes a series of aluminum pipe, up to 12 in. in dia, rather than the rubber hoses. Hydraulically controlled, these pipes jackknife on themselves atop a steel structure when not in use. When they are to be connected to a ship, they project forward much in the manner of a man extending his arm outward from the shoulder, with the elbow making the adjustment for length. Connected to the ship, the elbow rotation plus the "shoulder" socket, moving upward and backward as the ship rises, requires no manual adjustment. The installation at Hog Island (called a "spillway" by the oilmen) is said to be the largest of its type in the world, can discharge tankers at the rate of 10,000 barrels per hour per hose.

The fendering system consists basically of a series of heavy steel beams, faced with greenheart timbers, and carried on heavy steel springs housed in the wharf structure itself. The outer edge of the fenders (the greenheart) projects 5 ft from the edge of the wharf.

The new wharf, and its various parts, now standing completely surrounded by water, is to be connected to the shore by bridges or fill at separate points, behind each of the four breasting platforms—where provision is made for truck turn-arounds. The rest of the area formerly occupied by the old structure is to be cleared.

• **Contractor's answers**—With these considerations in hand, Nils Danielson, the contractor's superintendent, and his 120-man crew moved in last January to go to work.

Careful surveys of the site, prior to bidding and again before starting, had convinced the Horn crew that it could use land-based equipment for all operations. The old wharf deck existed and could be reinforced temporarily where necessary to support the heavy equipment. Some additional pile-driving was needed to replace badly rotted piles in the bents to be incorporated in the new



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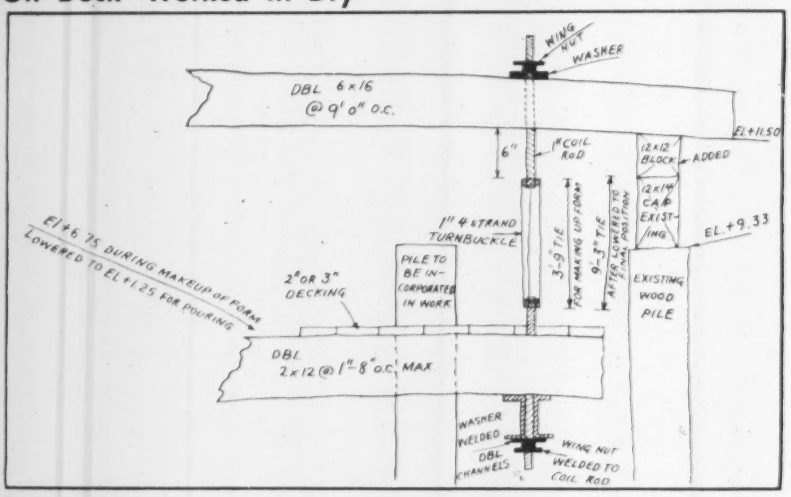


FORMWORK for casting pile caps is built directly over piles to be incorporated, makes use of pile bents to be removed later, is lowered at low water to provide dry working area without cofferdams. Entire form, excepting bottom decking, is recovered after cap has set.

work. This could be done by cutting holes in the existing deck, and driving the new piles through them. Additionally, a line of concrete-filled pipe piles was to be driven vertically at the outshore edge, backed by another line of similar piles, driven at a batter to provide horizontal stability. Piles up to 120 ft long are being handled by the crawler-mounted, 90 ton driving rig.

The same rig, with the driving leads replaced by a normal crane boom, could be used to rip out the old decking, once the work in a section was completed.

To provide a 4 in. concrete jacket called for on the outside of the pipe piles, Danielson worked out a simple answer: Circular cardboard forms, of the type more normally used to create voids within heavy concrete members, were equipped with spacers, slipped over the steel piles, and used as forms for the jacketing.

A good deal of the old decking is being used for formwork, particularly in areas where it was not essential to recover the form.

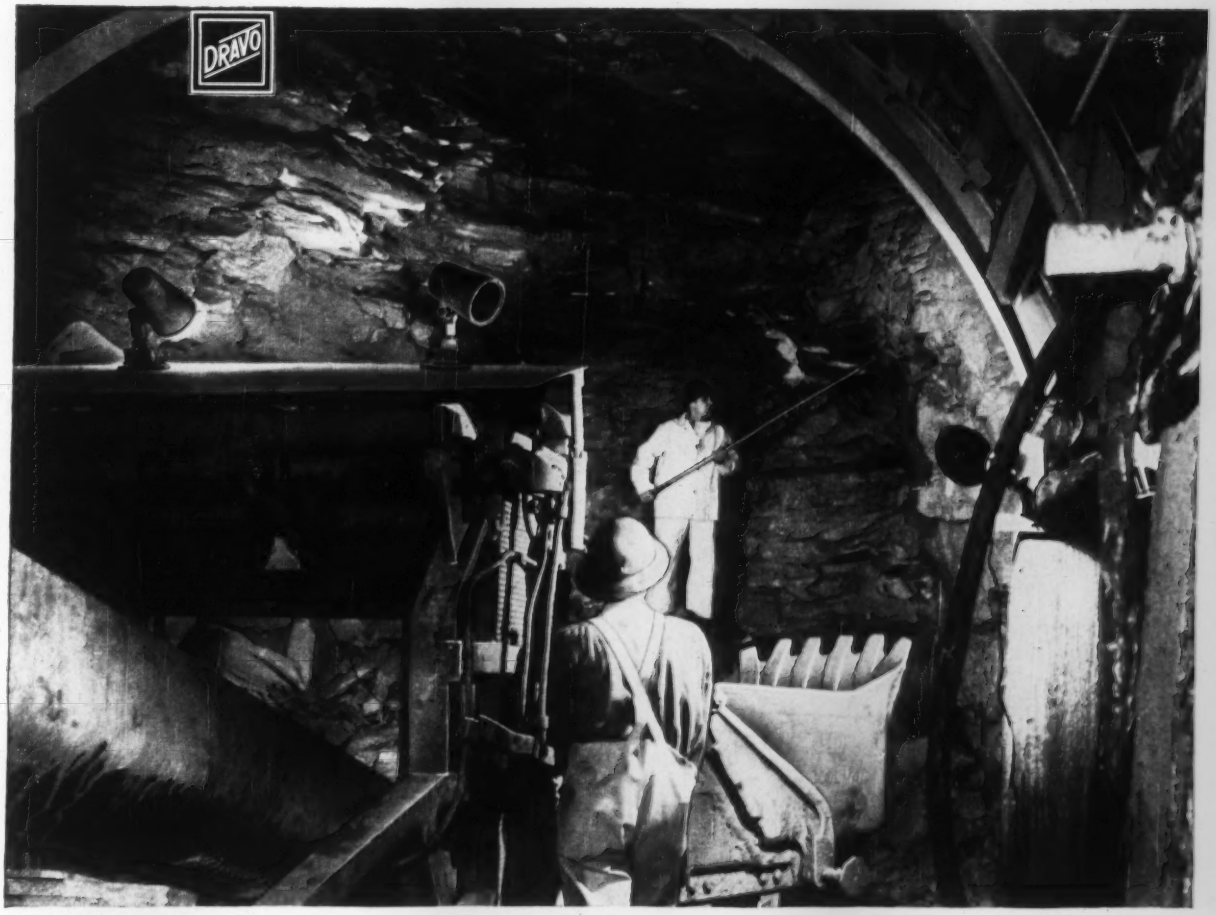
• **No cofferdam—but dry**—The oil company could release only one berth at a time for the contractor's use, and the problem of putting up a cofferdam in such a restricted area was ruled out by Horn as too expensive and unnecessary. Nevertheless, the design called for cutting off the piles that would support the new deck at an average of 1.75 ft above mean low water, and incorporating them in a reinforced concrete cap averaging 10 ft wide and varying in length up to 52 ft, with a uniform thickness of 2 ft. In addition, pile bents not to be used for support were to be cut off below the water line, piles along the front of the wharf, to the mud line.

Danielson determined to build forms the size and shape of the required cap piece, fit them over the piles, and cast his concrete in these reasonably watertight forms. But to build these forms ashore would have required surveying every pile, to determine its exact position, so that the form could be made to conform.

The contractor found a simpler answer. After pile driving and other work was completed, the decking was removed completely, as well as the timber caps and superstructure over the piles that would be used. The remaining bents were left intact, including the superstructure.

Now, using the existing piles that would not be incorporated in the new structure as supports, Danielson bridged over the bents that would support the caps. On these, suspended on screwed hangars, his men built their forms directly over the piles, providing holes as indicated. Plywood was used for sidewalls on the 4 ft deep forms, and 2 in. planking for the bottom, tied together with patented form ties that could easily be released. Steel channels, welded to the bottom of the screwed ties, supported the whole form.

With the forms built, the contractor waited for an outgoing tide, and, using "come-along" devices, pulled his forms into place over the piles, secured them at proper elevation. Although the forms were not completely watertight, his men now had a relatively dry, firm platform on which to work. They dropped into the form, cut off the piles to proper elevation, laid in reinforcing mats, and concrete was placed as rapidly as possible from ready-mix trucks. As soon as the concrete had taken its initial set, the form ties were released, the sides



Pittsburgh moves ahead . . . underground

Dravo men, working day and night, are punching out a 10-mile long tunnel some 100 feet under Pittsburgh. Their job is part of a main interceptor line in the Allegheny County Sanitary Authority's $80 million sewage system program—a vital step in Pittsburgh Renaissance.

Working from three separate access shafts, crews are blasting through sandstone and shale to connect the various sections. At 57 other locations in the city, Dravo is constructing downshafts which will serve as diversion structures to feed sewage into the large tunnel.

Projects of this magnitude are daily fare for Dravo. Other heavy construction activities include docks for industries; dam and locks on the inland waterways; piers for a bridge over the Mississippi River; a complete dock and harbor for ore boats in Lake Superior. Shown below are some of the many other specialized services and products Dravo has furnished to business and industry for more than 65 years. DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

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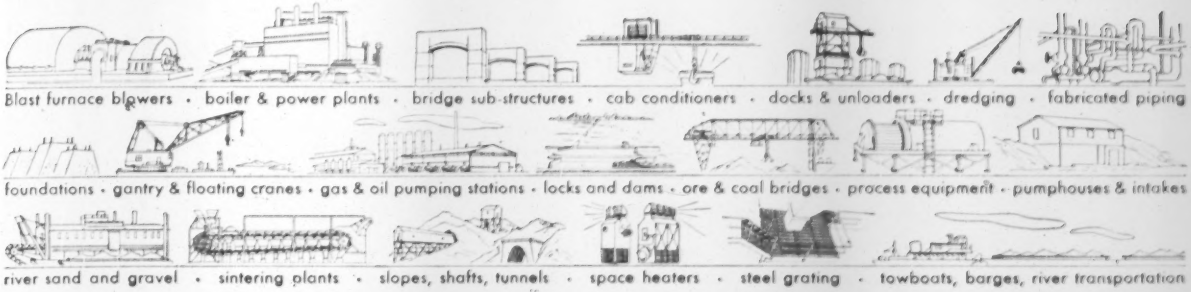

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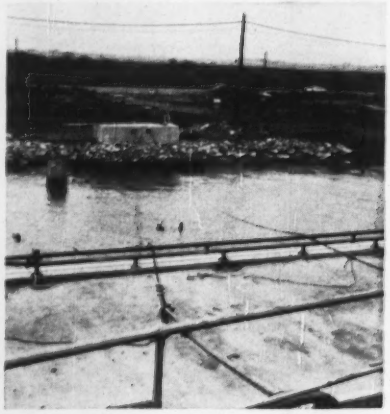


DOLPHIN set well inshore, provides long radius of mooring cables to eliminate need for constant adjustment of lines.

and bottom channels released and the entire form except the planking forming the bottom is recovered by the crane.

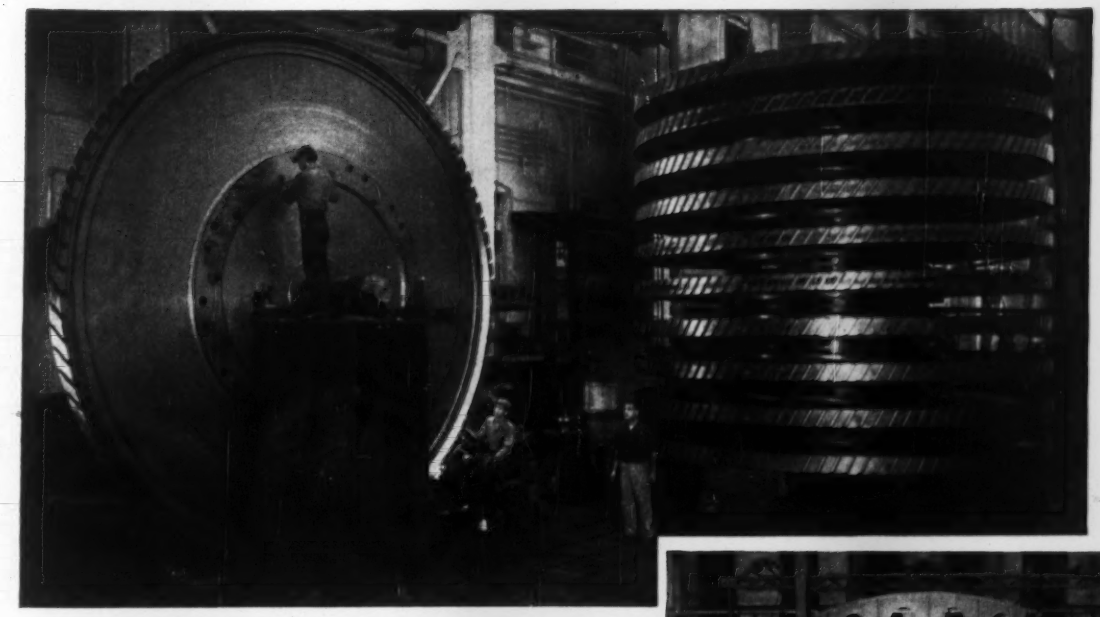
Danielson wasn't through with the extra row of full-length piles yet. As soon as the cap had acquired enough set to carry the added weight, he began formwork for the barrel arches and deck structure, which stands 12 ft above the new caps. The old piles now served (with added blocking) to support forms for the deck itself, to relieve that strain from the still-green cap.

Not until the deck was in place and stripped did Horn workmen go back under it to finally cut out the extra pile bents.

In supporting the 4 ft radius arches, the contractor used a keystoned wood form structure, standing on a pair of wedges. As soon as his concrete had set here, he could knock out the wedges with a sledge from the pile cap, drop the form and remove it for re-use.

• **Work moves along**—The same procedure is being used throughout the job —and as fast as Horn can complete a berth, Gulf moves in and releases another. At the moment, one of the new berths is in full use. Other work on the job includes installation of the new unloading "spillways" and their equipment, plus new pipelines and other facilities connected with this operation; the moving of the two shed warehouses now on the wharf to a new location, and construction of access bridges and fills both for trucks and for a railroad siding.

The work is being done under the general direction of T. A. Dietz, manager of engineering for Gulf Oil Corp., with Donald Lessig as construction foreman. Robert Sharkey is resident engineer for the contractor, assisting Danielson.



Rotor discs for mammoth 11-stage compressor were balanced and stacked for alignment in one of Newport News' five huge machine shops. Large engineering and technical staffs with a vast plant make Newport News an ideal source for large equipment . . . *standard or special in design.*

A 35-foot boring mill in Newport News' plant machining the 374,000-pound upstream housing for the giant axial flow compressor. The compressor is heart of an 8-foot supersonic wind tunnel at the Ames Aeronautical Laboratory of the National Advisory Committee for Aeronautics at Moffett Field, Calif.

To create winds exceeding

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Newport News builds world's Mightiest Compressor

Whenever you want large units built with careful attention to detail, give the job to Newport News.

This company recently built an eleven-stage axial flow compressor that shatters all previous records for wind force . . . using what is believed to be the world's largest rotating object.

The rotor, weighing more than 400 tons, comprises eleven huge discs. Each disc, machined from a 96,000-pound forging, was finished to a 50,000-pound wheel and balanced to within 26 ounces at the rim. In each rim, slots for blades were machined to within .005″ on special milling heads designed and produced in the Newport News plant.

Here at Newport News, you'll find more than large productive capacity. In machine shops, foundries and forging plants Newport News craftsmen complete your orders with specialized techniques backed by experience in fabricating thousands of products.

Newport News' craftsmen produce units that range from small components of spinning machines, to mammoth hydraulic turbines . . . from piping, pumps and valves, to vacuum tanks, digesters and bridge caissons.

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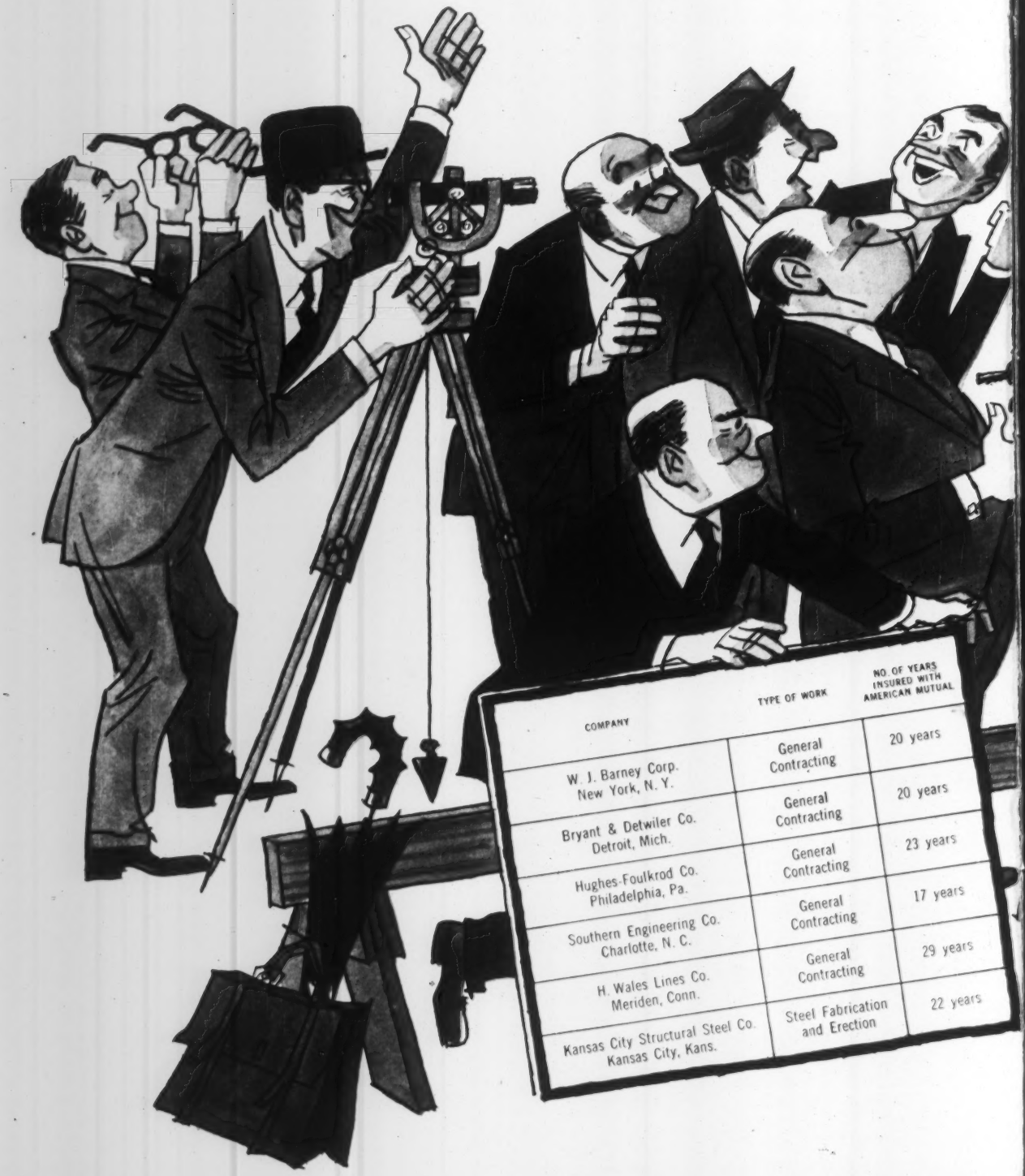
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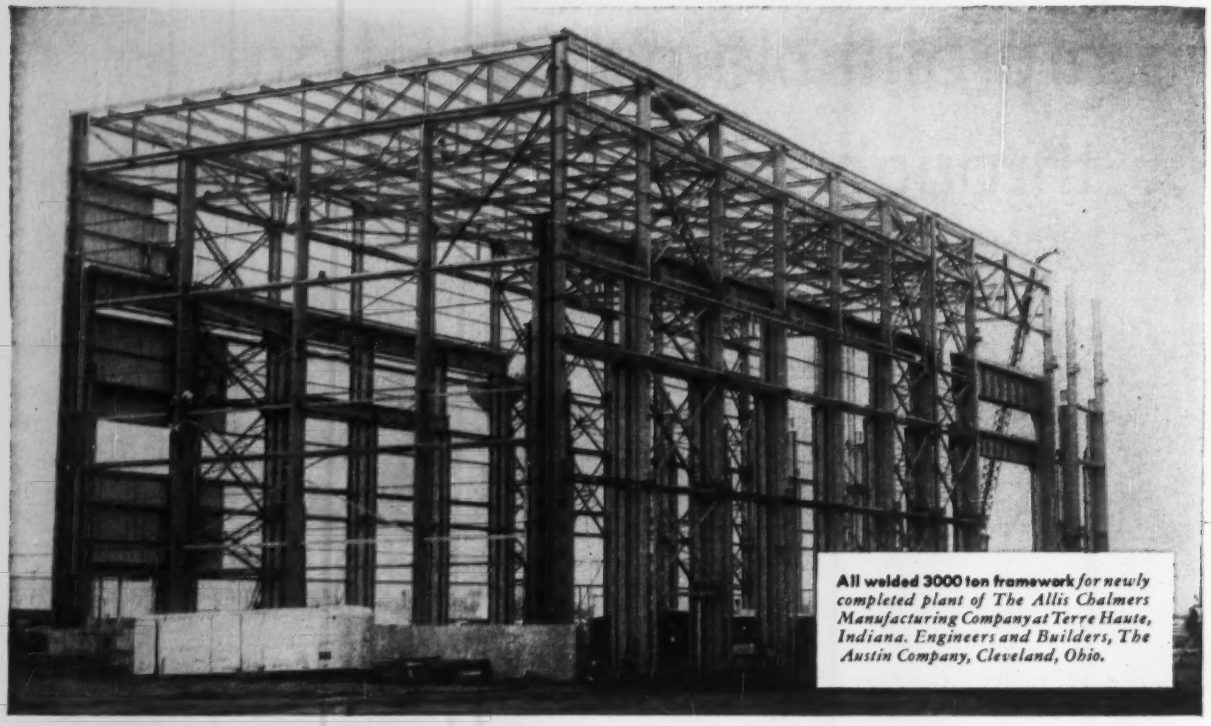

All welded 3000 ton framework *for newly completed plant of The Allis Chalmers Manufacturing Company at Terre Haute, Indiana. Engineers and Builders, The Austin Company, Cleveland, Ohio.*

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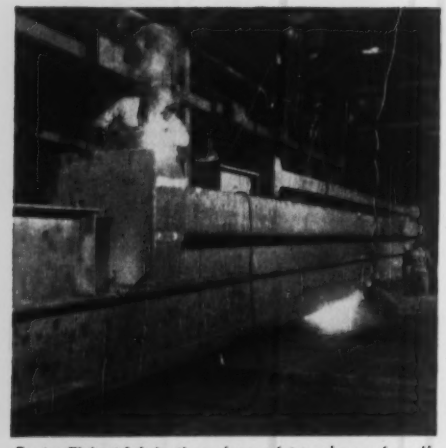
...welded design builds it for less money



Fast, efficient fabrication *of one of 34 columns for all-welded framework. Columns ranging from 17 to 23 tons in weight are made from standard rolled structural shapes and steel plate.*

THERE'S more work area, greater overhead clearance at this new manufacturing plant, thanks to simpler construction with shop welded structural design. And maintenance is simpler too, because there are no splice plates and rivet heads to clean and paint except bolted field connections. Sides are simply curtain walls.

Nearing completion, this 540′ x 240′ structure has 81′3″ overhead clearance beneath its 2-200 ton traveling cranes. The structure also supports 3-60 ton, 2-25 ton, 1-10 ton and 2-2 ton cranes to give maximum efficiency for handling heavy machinery.

This is typical of many types of manufacturing plants now being built simpler, faster, with less steel using welded design. *Latest ideas in structural design are presented in new 466 page section of 11th Edition Procedure Handbook of Arc Welding Design & Practice; available by writing:*

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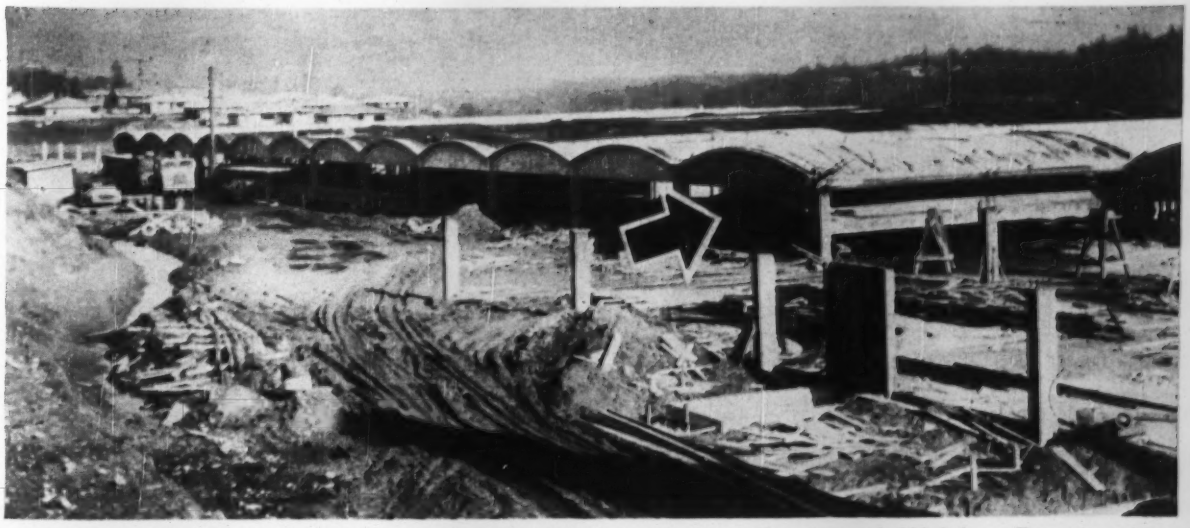


CLASSROOM BUILDING for Seattle high school has 24 parallel 30 ft wide thin shell sections each 180 ft long. Forms (arrow) were moved laterally from one barrel to the next by means of a specially constructed jumbo.

How Jumbo Moves Thin Shell Forms

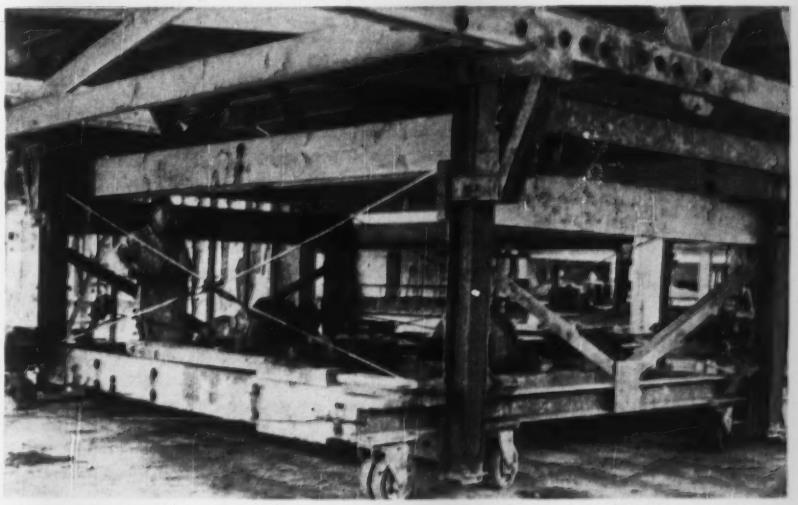
Forming a thin-shell roof for a high school classroom building posed a neat problem for a Seattle contractor. The building roof in question has 24 barrel arches each 30 ft wide and 180 ft long. It is a major item in Seattle's $3 million Southwest senior high school.

Movement of form panels is restricted by low clearance—8 ft 4 in—at the shell edges. The low clearance ruled out fork lift moving. Rather than use a crane, Howard S. Wright & Co., holder of the $2 million general contract, designed and built a special jumbo, which moves a section of formwork from one barrel to another in 25 minutes.

The 12x16 ft jumbo lowers each 30x45 ft form section 5 ft to within 2 ft of the floor, allowing 1 in. clearance beneath the edge beam and 3 in. between the columns as it is towed into the next bay. The jumbo then raises the section into position for the next pour.

• **How it works**—Produced at a cost of $2,000, the jumbo has end frames of 6x6 in. wide-flange steel columns, 7 ft high, fabricated in one piece and mounted on heavy steel casters. The end frames are tied together by 3x12 timbers. A lifting frame, moving up and down the columns is activated by a 5 ton hoist powered by a 3 hp motor on an 18 to 1 reduction.

The jumbo is moved from one bay to another by two 2 ton hoists in an operation requiring the services of only three men.



FORM MOVING JUMBO includes a geared up hoist that lowers forms 5 ft to clear low edge wall. Forms handle 30 by 45 ft roof section at a time.

Two complete sets of forms are being used in the classroom building, with each set of four sections given ten re-uses. Each section weighs 17,000 lb. The form surfaces are pressed wood-fiber board.

Each section of form is supported on two timber trusses, with a 17 ft span between the trusses and a 14 ft cantilever at each end. In raising or lowering the forms, these trusses rest on the elevator arms of the jumbo. After the jumbo has raised a section into position, the load is transferred to four wooden towers, leaving a clear working area. Since the hoist can be stopped at any point, no jacking is required.

The two end sections of each shell form must be retracted 14 in. to clear a column. To make this possible, a retractible joist is held to the cantilever joist by two ¾ in. plate collars and secured by wooden wedges. When the ends must be pulled in, the form is lowered, the wedges removed and the joists slid back.

The project is the design of Naramore, Bain, Brady & Johnason, architects, Seattle. Worthington & Skilling, also of Seattle, were consultants for the structural engineering.

Upsetting Bethlehem tie-rods, for new Port of New York Authority Pier II in Brooklyn. General Contractor: Fehlhaber Corporation.

Making 87-ft Tie-Rods for New Pier on Brooklyn Waterfront

To improve the facilities of New York harbor for loading and unloading vessels, The Port of New York Authority is currently supervising the construction of a 2130-ft bulkhead for a new Pier II at the Brooklyn-Port Authority Piers. The project will use approximately 500 Bethlehem tie-rods.

About 400 of these rods are 87 ft, 10 in. long and 3⅞ in. in diameter, upset to 4½ in. at each end. The remainder are 20 ft, 2 in. long and 2 in. in diameter, upset to 2½ in. at each end. They are made of structural steel, to ASTM Specification A7-55T.

Wherever tie-rods are called for, you can count on Bethlehem meeting your needs. Bethlehem tie-rods, with cut threads or rolled threads, come in all lengths. Cut-thread rods are furnished plain or upset, in diameters through 4½ in. Rolled-thread rods are made in diameters through 1½ in. Both types can be ordered straight or bent, in single or multiple units, either asphaltum-dipped or hot-dip galvanized.

If you are planning a construction project that will call for tie-rods, we would be glad to talk over your requirements with you. Just call or write the nearest Bethlehem office.

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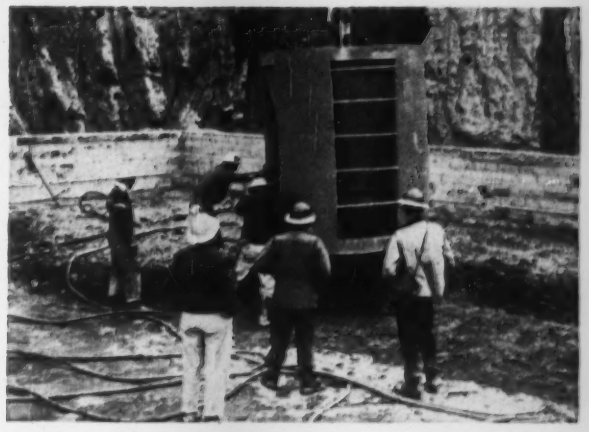


Between rock quarry and pour—four mixing plants will be spewing out the concrete for 2 million yards of structures all this season on the St. Lawrence power project.

Producing 8,000 cu yd of Concrete a Day

Harry H. McLean
Concrete Engineer
Uhl, Hall & Rich
Massena, N. Y.

Four major structures will be taking the output of four separate concrete plants on the U.S. part of the St. Lawrence Power Project this summer.

While all the aggregate will be coming from the same big quarry and specifications for finished concrete in all four structures are the same, each contractor is accomplishing the requirements by slilghtly different means. All have automatic mixing plants, equipped with rinsing and finish screens. Aggregate is delivered to each separate plant by rail or truck—all from the same source.

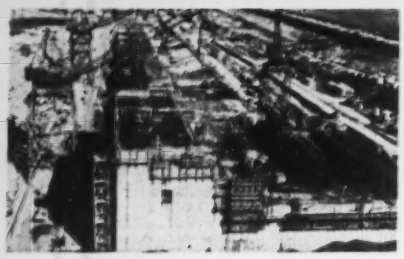
Cementing medium in the concrete mixes for the St. Lawrence Power Dam and Long Sault Dam consists of 75% portland cement type II and 25% natural cement. Cementing medium for concrete mixes in the Massena Intake Structure and Iroquois Dam is portland cement type II.

Six inch maximum size aggregate is used in the concrete mixes for the massive sections of the structures. For heavily reinforced or thin sections, concrete mixes may contain 3 in., 1½ in. or ¾ in. maximum size aggregate to conform to placing requirements.

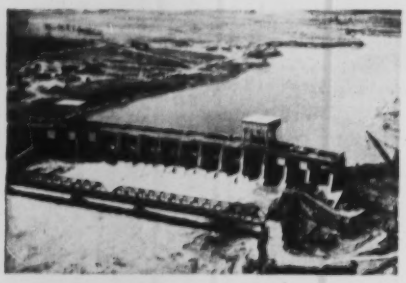
• **Aggregate plant**—To meeting the rate demand requirements, the aggregate contractor (Tecon Construction Corp. of Dallas, Tex.) installed a plant constructed around a 53 x 60 in. primary impact crusher. The entire plant is

Four dams—four mixing plants

CONCRETE comes from four 4 cu yd mixers that combine portland and natural cements . . .



. . . FOR ST. LAWRENCE Power Dam's U. S. half, which will total 1,000,000 cu yd.



LONG SAULT DAM, the $600 million power project's gated spillway structure . . .

. . . WILL TAKE 660,000 CU YD, its concrete plant having four 2 cu yd mixers.

arranged in three stages, any one of which can be operated independently of the others, which makes the plant flexible for repair and maintenance purposes. The aggregate production plant reduction facilities are set in closed circuits and any size of material can be further reduced whenever the need may arise. Particle shapes of the materials produced by this impact crusher are characteristically cubical in shape.

The coarse aggregate is separated into four sizes (6, 3 1½ and ¾ in. maximum) and stockpiled over a recovery tunnel. Sand is produced by rod mill and gyro-disc crusher, and a natural fine sand is added to the circuit to improve workability and maintain uniformity of gradation. Gradation of the sand can be controlled by a water scalping tank, which can waste intermediate sizes but, to date, it has been necessary to waste only minus 100 sizes because other controls, such as rod mill feed and the amount of blending sand added, have been sufficient to maintain required gradation. The tertiary unit, which produces sand and ¾ in. stone, utilizes the wet process and all other stone is produced dry.

The plant is equipped with dual facilities and can load either rail cars or trucks. St. Lawrence Power Dam and Long Sault Dam receive their aggregate by rail while Massena Intake Structure and Iroquois Dam take delivery by truck. This made necessary two completely separate weighing and billing departments to accommodate the carriers.

During last June, July and August, this plant averaged over 300,000 tons of finished aggregate shipped per month.

Power Dam

The mixing plant for the St. Lawrence Power Dam is automatic, having four 4 cu yd mixers with modifications to comply with the requirement of the specifications.

The recorder roll in the control room of the plant has been modified so that a minimum of 30 minutes of plant operation can be observed after recordation. The plant is also equipped with a sand moisture meter, which records the percent of moisture for each batch of sand on a continuous graphic chart. This meter, when properly calibrated, has been found to be accurate to within 0.2% moisture.

To maintain uniform gradation of concrete aggregates as they enter the mixing plant, all materials except the sand and ¾ in. aggregate pass over a 5 x 14 ft double deck rinsing located at the lower end of the belt leading into the plant. The purpose of this screen is to eliminate all dust and −200 material as it is washed over a No. 5 screen. The aggregates are re-

graded where they pass over two sets of 5 x 14-foot double deck finish screens which are set on an 18 degree angle. These screens are located above the aggregate bins in the top of the plant. Materials from each screen pass directly into their proper bin.

• **Novel heating**—A rather novel winterizing installation was made by laying an 18-in. corrugated pipe above and along the entire length of the recovery tunnel through which the exhaust gases and smoke are directed from the heating plant. A fan is located at the outlet end of the pipe and this heat which would normally be lost is utilized to heat material next to the recovery tunnel.

In addition, steam pipes are laid throughout the interior of the recovery tunnel with facilities available for the use of live steam above the gates. The belt leading into the mixing plant is completely covered and heated by steam pipes along the cat-walks adjacent to the belts.

The capacity of the aggregate unloading facilities is about 110 70 ton railroad cars per day.

• **Cement piped in**—Portland cement is received for the St. Lawrence Power Dam and the Long Sault Spillway Dam from a Canadian cement mill by water. Ships dock in the Cornwall Canal within Canada about ¼ mi upstream from the Power Dam. Unloading is done by portable cement unloading equipment and storage on the Canadian side consists of two 7,500 bbl silos. The cement is transferred from the Canadian side by pumps through a 10-in. pipeline, 3,300 ft in length, into two 7,300 bbl silos near the Power Dam mixing plant. One silo is reserved for Long Sault Dam storage, from which the cement is transferred by truck to Long Sault Dam; the other silo is utilized for storage of cement for the Power Dam.

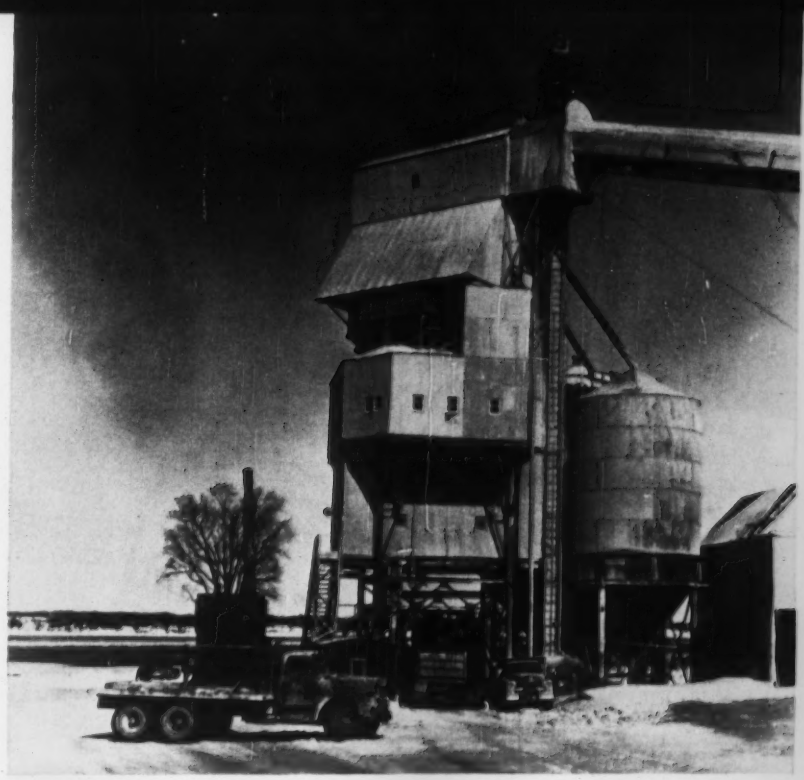
Natural cement is received from the U. S. side by rail into a 2,000 bbl silo on the site, adjacent to the mixing plant.

Facilities are also available for unloading portland cement from railroad cars, as winter delivery of cement must come by rail when water delivery is shut down by ice in the St. Lawrence and Cornwall Canal.

Concrete is transported from the mixing plant by trucks mounting two 4 cu yd dump bodies. The dump bodies are winterized for use during cold weather by utilizing exhaust from the truck motors.

Long Sault Dam

The mixing plant for Long Sault Spillway Dam is also automatic, having four 2 cu yd mixers, and in general it has the same characteristics as the



A FULLY WINTERIZED PLANT with three 2 cu yd mixers will supply 190,000 cu yd . . .

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MASSENA INTAKE (180,000 cu yd) will supply water to Alcoa plant and Village of Massena . . .

. . . **ITS MIXING PLANT** has two 2 cu yd units.

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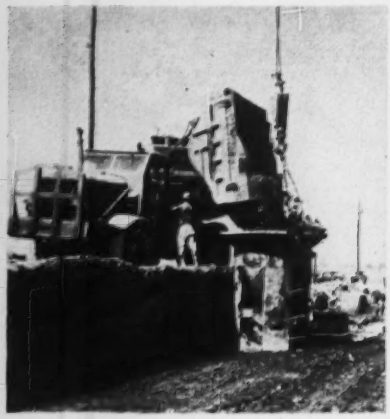
City_____ Zone____ State____

. . . Concrete production



SIDE DUMP, fast and efficient, is achieved by specially mounted trucks.

plant for the Power Dam described above.

The rinsing screen is double deck, 5 x 14 ft, and the finish screen on top of the plant, is a triple deck 5 x 16 ft screen which is set on a slope of 15 degrees.

Portland cement is received from the Power Dam cement silo by truck and stored in a 7,500 bbl silo adjacent to the mixing plant. Natural cement is received by rail and stored in a 7,500 bbl silo. Transfer of both cements to the mixing plant silo is accomplished by pump.

Concrete is delivered from the mixing plant to the structure in 4 cu yd concrete buckets hauled on flat-bed trucks, three buckets per truck. As there is no change from one carrier to another from the point of filling to the point of delivery, the dispatching of concrete is simplified.

Iroquois Dam

The mixing plant for Iroquois Dam is also automatic, having three 2 cu yd mixers, and is equipped with both rinsing and finish screens. The rinsing screen is a double-deck horizontal vibrating screen 4 x 12 ft in size. The finish screen on top of the plant is a triple deck horizontal screen 4 x 12 ft in size. Both screens have operated in a satisfactory manner.

Portland cement is received by truck from the rail head in Ogdensburg, N. Y., and is stored on the site in two silos of 7,500 and 2,700 bbl capacity.

Concrete is transported from the mixing plant to the dam in concrete buckets on trucks. Handling of buckets from trucks to forms is accomplished by cranes.

Capacity of the aggregate stock pile is approximately 80,000 tons. Aggregate is received by truck, dumped to one side of the tunnel and moved over the tunnel by bulldozers. Partitions separate each aggregate size and prevent their mixing.

• **Winterized plant**—The entire plant is winterized for winter placement. Concrete was placed during the entire 1955-56 winter season (ENR Apr. 5, 1956, p. 38) and no difficulty was experienced maintaining concrete temperatures in the mixing plant. Source of heating was a steam plant located adjacent to the mixing plant.

During the erection of this mixing plant, the contractor used an ingenious method to expedite the installation of the recovery tunnel. The 7 ft dia tunnel, which had been used previously on another job, was received at the damsite in 40 ft lengths, complete with troughing rollers and draw-down gates already in place. As each unit was received, it was unloaded into the trench, bolted to the adjoining unit and was then ready for stockpiling materials above. It is of interest to note that the sections of recovery tunnel contained concrete to hold troughing roller supports in place, but as only one section could be shipped in a car, this extra weight didn't entail additional cost.

Capacity of this plant has been adequate for the demands of the structure and in general its operations have been satisfactory.

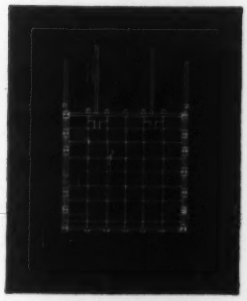
Massena Intake

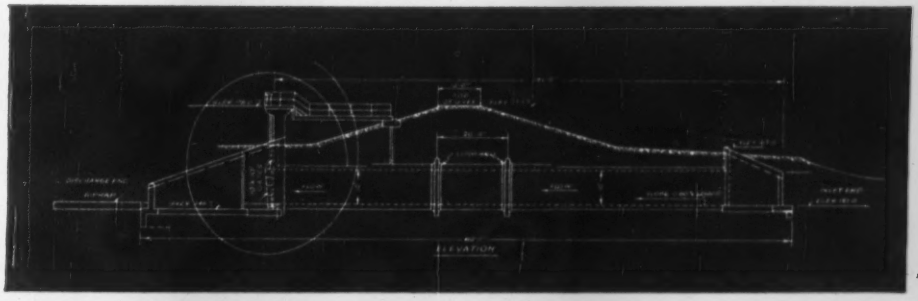
The Massena Intake plant is automatic with two 2 cu yd mixers. As is the case with the other plants, the recorder roll in the control room is exposed for a minimum of 30 minutes after recordation. The rinsing screen for the Massena Intake plant is a single deck screen with a slotted No. 5 screen. This unit works in a satisfactory manner and has high capacity. Finish screening over this mixing plant is accomplished by use of two double deck 4 x 14 ft screens.

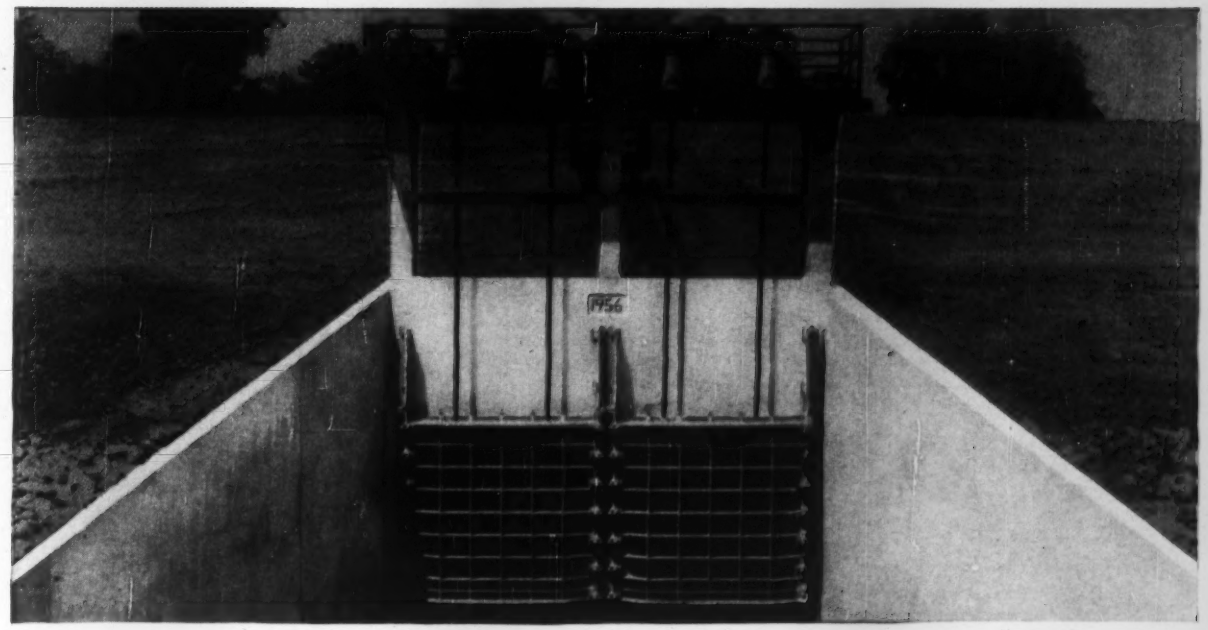
Transporation of concrete is accomplished by dumping directly into buckets which are transported to the structure site by trucks.

Portland cement is received by truck from the railhead in Massena and is stored in a 5,000 bbl silo adjacent to the plant. Transfer from the silo to the mixing plant is accomplished by a bucket elevator.

The $335 million U. S. port of the St. Lawrence Power Project is being built by the Power Authority of the State of New York under the direction of Robert Moses, chairman; William S. Chapin, general manager; and J. Burch McMorran, chief engineer. The engineering firm of Uhl, Hall & Rich (partnership composed of the directors of Chas. T. Main, Inc., Boston) is handling design and supervision of construction for the power authority.







RODNEY HUNT SLUICE GATES ...MAKE THE BAYOU BEHAVE

Water control engineering problems are unique in their profound effect upon human lives, health and prosperity.

In this installation, Rodney Hunt engineering and sluice gate design protect more than 80 square miles of farm land. The gates, when open, allow normal drainage to the Bayou River, and when closed prevent flooding as the river goes to flood stage.

The two Rodney Hunt 10-foot by 10-foot cast iron bronze-mounted sluice gates were designed for maximum opening with minimum structure. The installation is unique because inherently rigid flange frame sluice gates with wall thimbles were installed with attaching studs projecting to the front of the frame. This eliminated the need for excessive side clearance and saved on structural costs. Rodney Hunt also supplied precision-built interconnecting floor stands with twin stems on each gate for balanced, smooth operation.

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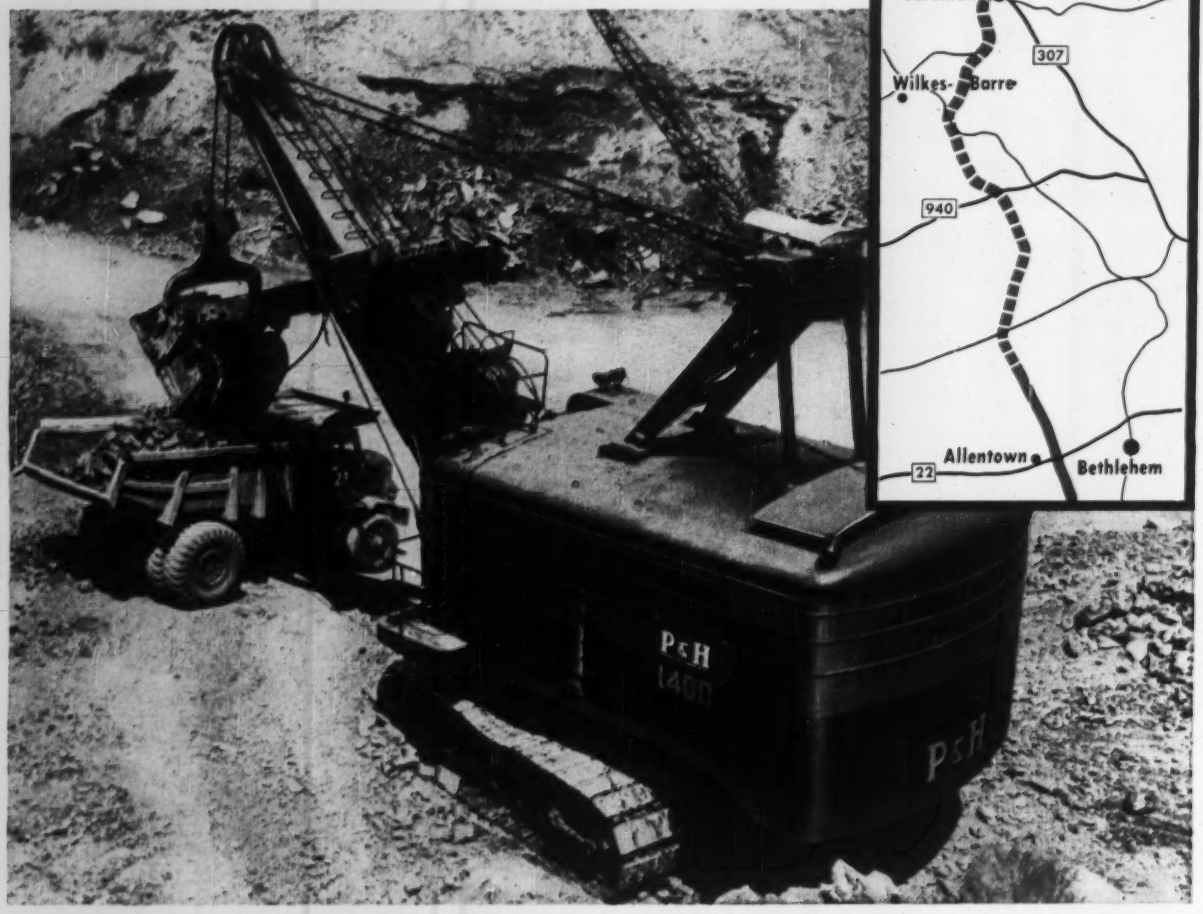
Big Dig! 2,776,000 cubic yards of earth and rock had to be excavated by J. Robert Bazley, Inc., for the Scranton-Allentown sections of the Pennsylvania Turnpike.



J. Robert Bazley, Inc., Pottsville, Pa.

uses ESSO MULTI-PURPOSE GREASE H ...cuts lubricating costs, prevents errors

J. Robert Bazley, Inc., of Pottsville, Pa., recently completed 9.78 miles of the Pennsylvania Turnpike's new Northeast Extension. Preparation work on one section involved the heaviest excavation on the entire extension. (One cut was 1000' long and required moving 697,000 cubic yards!)

Bazley uses Esso Multi-Purpose Grease H in *all* equipment — for chassis, wheel bearing and general lubrication. Its performance has been truly outstanding . . . equalling or excelling the performance of several special-purpose greases. And Multi-Purpose Grease H has meant considerable savings, too. For one thing, there is no need of stocking a variety of greases. This means simplified inventory — resulting in faster dispensing. But even more important, there is never any chance of using the wrong lubricant and causing damage that could result in costly repairs and down-time.

Bazley now operates over 500 pieces of major power equipment. They *all* run on Esso fuels and lubricants *exclusively*. In fact, for almost *20 years*, Bazley has depended upon Esso products for the finest engine performance...maximum power, fewer breakdowns, longer life. They've never been disappointed!

For better results . . .

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Esso products and services are available through Esso Standard Oil Company plants and offices in more than 400 cities and towns throughout New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, the Carolinas, Tennessee, Arkansas, Louisiana and the District of Columbia.

AIRCRAFT ASSEMBLY PLANT for Douglas DC-8 jet transports has a million square feet of floor space in two main buildings separated by a service building. $20 million facility features long spans and high clearances.

More Space Needed to Build Today's Jets

Modern planes deserve modern facilities. That's the reason Douglas Aircraft Co. is building a completely new assembly plant for the new DC-8 jet transport.

More than a million square feet of floor space is included in the Long Beach, Calif., installation. And most of this in two 1,144 ft long buildings. One is three 160-ft bays wide. The other is two bays wide—one of 200 ft and one of 160 ft.

The vast working areas are heated by a high temperature hot water system that is relatively rare in the U.S. The system uses water at temperatures up to 400 F—it doesn't become steam because it is under high pressure. Substantial savings result as compared with steam heating or lower temperature water systems due to reduced pipe sizes and lower pumping costs.

Douglas started to occupy the first building of the new $20 million facility in January. The first of the new planes will roll out next year. First commercial operation is scheduled for 1959.

Wing span of the DC-8 is 139 ft 8 in. with a 30 deg wing sweepback. Over-all length of the new jet plane is 150 ft 6 in., and height of the tail is 42 ft 4 in. Gross weight is about 14 tons.

• **Windowless buildings**—Major units in the new plant are a 1,144x480 ft structures assembly building with 40 ft clear height and a 1,144x360 ft final assembly building which has a 50 ft clear height. These steel frame, windowless structures are separated by 50 ft for fire protection purposes, which provides the space for a 2-story service building housing shops, offices, drafting rooms, cafeteria and boiler room. Painting and stripping operations will be carried out in a separate 160x320 ft building.

Column spacing was dictated by the Douglas manufacturing requirements. The 160 and 200 ft bays provide ample room for maneuvering the huge planes. But, the history of the aircraft industry is such that any facility must be adaptable to work on larger planes.

Interior column spacing is 60 ft with a 30 ft spacing used along the side walls except at 60 ft wide door openings. Both buildings have full width sliding doors at each end. And there are two 60 ft wide door openings on each side of each building which when open provide a clear passageway through the two structures.

Except for size, there is nothing really unusual in the steel frames. Earthquake considerations govern horizontal forces. The Long Beach, Calif., code calls for design lateral force to be 13.3% of the dead load. Design live load on the roof is 12 psf. The structures assembly building frame is designed for two 12 ton monorail cranes in each span. There is no crane load designed into the final assembly building. But both buildings must support in the roof trusses unit heaters and electrical substations plus catwalks for access.

Steel trusses on 30 ft centers are 12½ and 15 ft deep to span the 160 and 200 ft bays. Maximum chord size—two 8x8x1⅛ in. angles—occurs in the 160 ft span under crane load. The 60 ft between interior columns is spanned by jack trusses which carry at this mid point one end of the alternate long-span transverse trusses.

Horizontal forces in the transverse direction are resisted by bending in the columns. These forces together with the height involved require that the columns be of substantial size. The largest available rolled members—36 in. wide-flange beams—are used together with 18 in. channel coverplates.

Horizontal loads in the longitudinal direction are resisted by bracing in the exterior walls.

Diagonals in the plane of the top chord for tension resistance would be relatively slim and have a long unsupported length (42 ft.). To minimize size of the diagonals, they are supported by the 12-in. I-beam purlins, which are

. . . Douglas' giant aircraft plant

BIG COLUMNS—36 in. wide-flange beams with 18 in. channel cover plates—are needed to resist transverse horizontal forces. K-bracing resists longitudinal horizontal forces.

spaced on 8 ft. centers. All steelwork was shop riveted and has bolted field connections.

Roofing is a ribbed type steel decking with a relatively small rib opening. This is covered by insulation board and built-up roofing.

Walls are corrugated aluminum (0.32 in. thick with 2½ in. corrugations) backed up by fibrous glass insulation. The 1 in. thick insulation is supported by extruded aluminum "T" bars. The 200,000 sq ft of aluminum siding was installed from the outside with rivets.

Foundations are relatively simple. Good material capable of 8,000 psi bearing exists 8 to 13 ft below surface of the ground. Accordingly, the structures are supported by belled caissons.

The buildings are actually higher at one end than the other since the site slopes about 3 ft in the 1,144 ft length. For best crane operation, the roof is level, and columns at one end are simply 3 ft longer than columns at the other end.

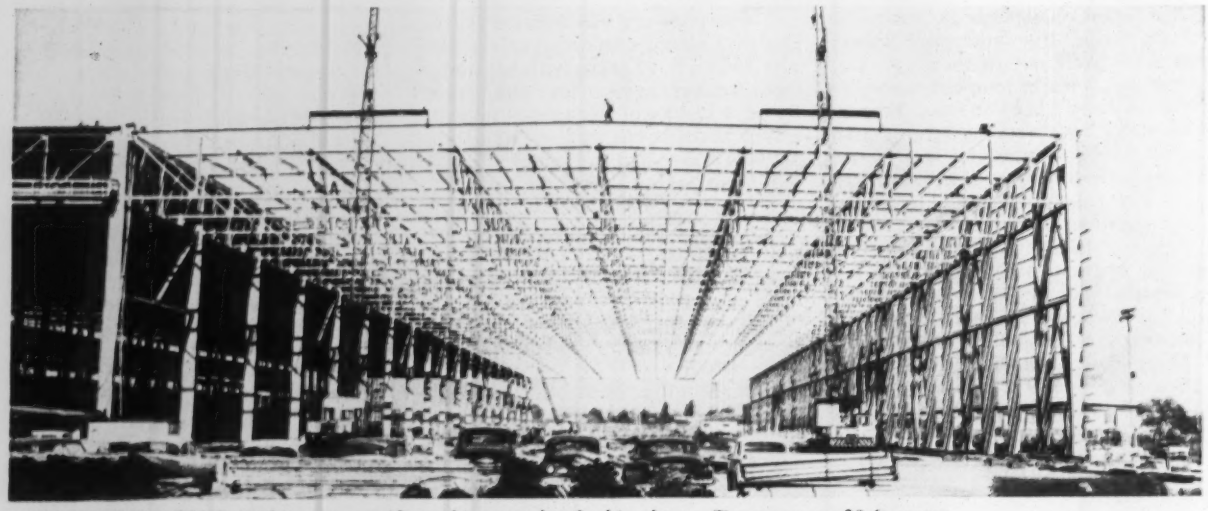
The high ceiling heights provide a lighting problem. Douglas requirements are a maintained intensity of 80 foot-candles at floor level. This is developed by mercury vapor lights at the level of the lower chord of the trusses.

• **Heat from hot water**—The high temperature hot water heating system takes water at 400 F and circulates it to unit heaters. The system is completely closed with a maximum temperature drop of 180 F. Initial pressure is the amount necessary to keep the water from vaporizing, or about 230 psig.

There are numerous claimed advantages for the high temperature hot water heating. Smaller pipe sizes can be used as compared with lower temperature hot water systems. As the hot water unit heaters can be operated in series there is less piping than for a steam system. The Douglas plant does not require high pressure process steam so the heating system could not make use of available temperature drop from process steam as is so often the case. The water lines do not have to be carefully sloped for drainage as would be the case in a steam line. And the hot water system is said to be much less corrosive than steam would be.

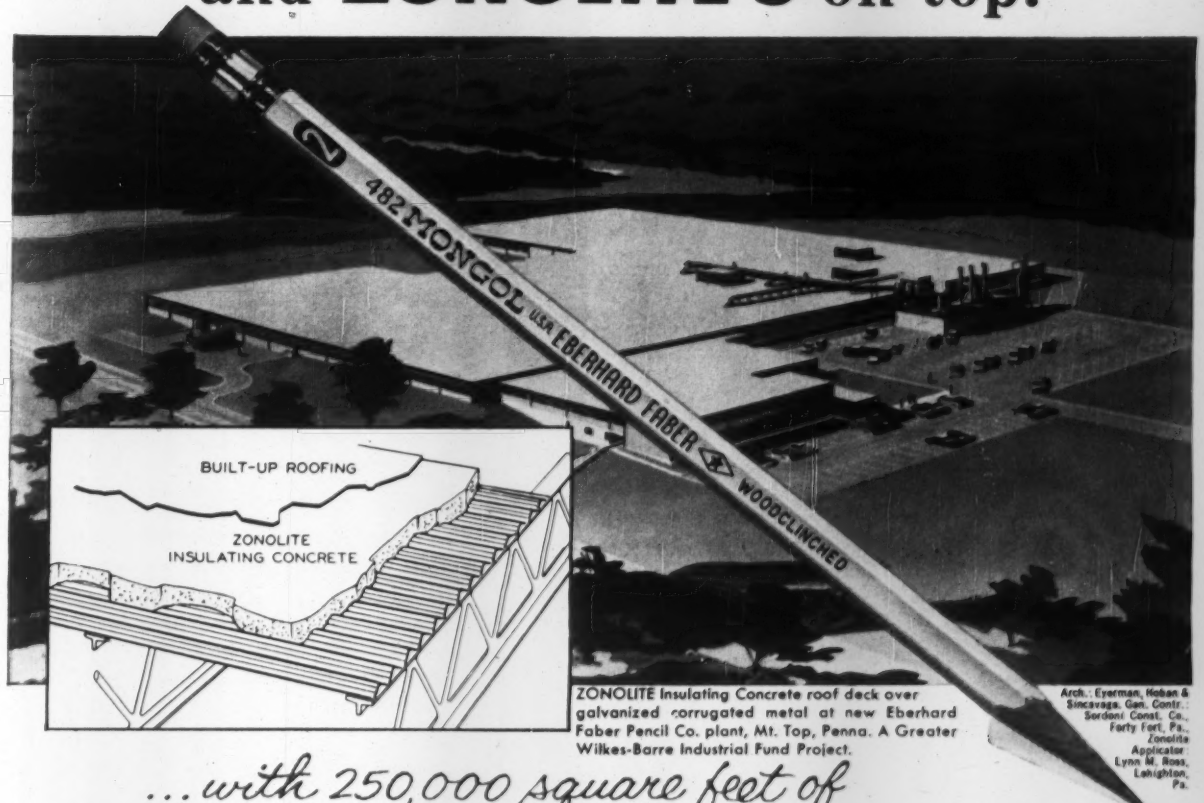
There are three hot water circuits, one for each of the bigger buildings and a third for the service building. The circuit for each big building is broken down into a number of subcircuits. For example, the structures assembly building has 32 unit heaters with 4 subcircuits of 8 heaters in series.

Hot water comes from three generators each having an output of 60 million Btu per hour. This is roughly equivalent to a 60,000 lb per hour steam boiler.



LONG TRUSSES—200 ft in this case—provide working area for the big planes. Trusses are on 30 ft centers.

EBERHARD FABER sharpens pencil and ZONOLITE'S on top!



ZONOLITE Insulating Concrete roof deck over galvanized corrugated metal at new Eberhard Faber Pencil Co. plant, Mt. Top, Penna. A Greater Wilkes-Barre Industrial Fund Project.

Arch.: Everman, Hoban & Sincavage. Gen. Contr.: Sordoni Const. Co., Forty Fort, Pa. Zonolite Applicator: Lynn M. Ross, Lehighton, Pa.

...with 250,000 square feet of ZONOLITE® CONCRETE over corrugated metal deck

Welding trussed tees to purlins.

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Part of 250,000 sq. ft. roof deck. Pipes used as screed bars.

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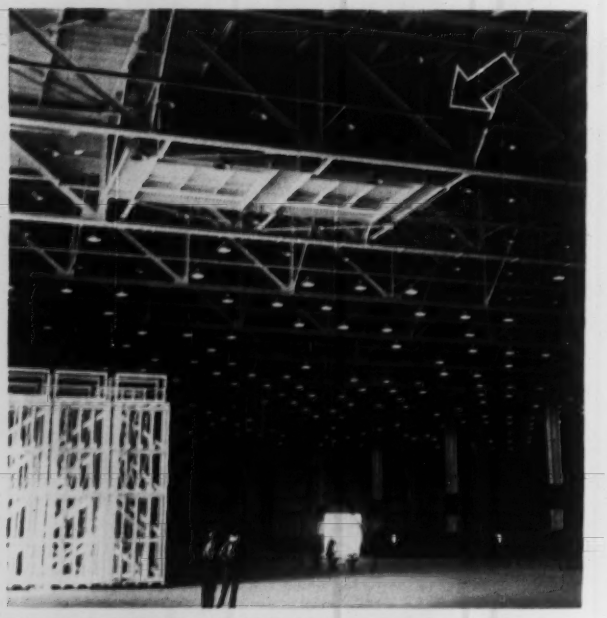
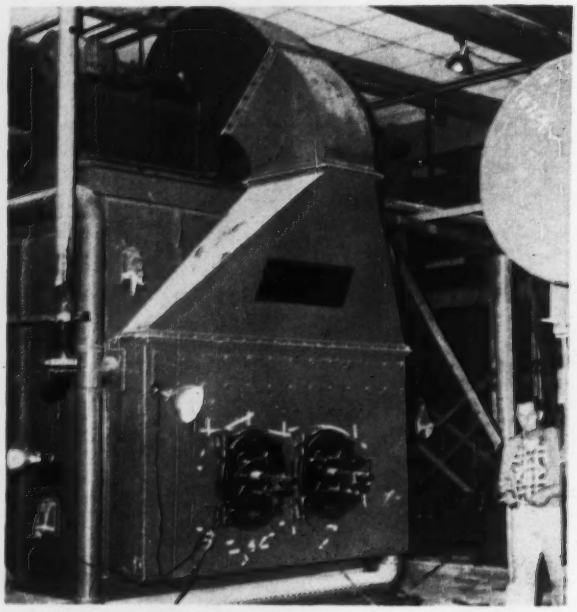
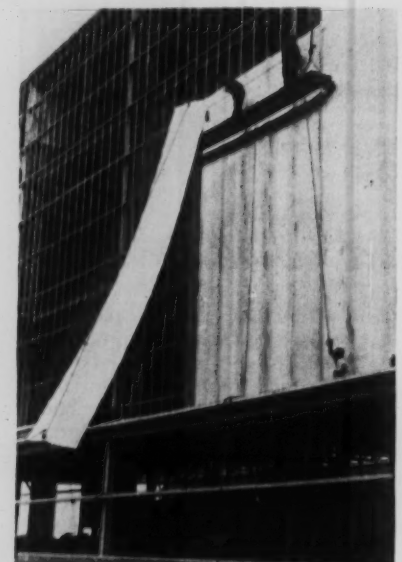
. . . hot water heating system saves construction and operation dollars



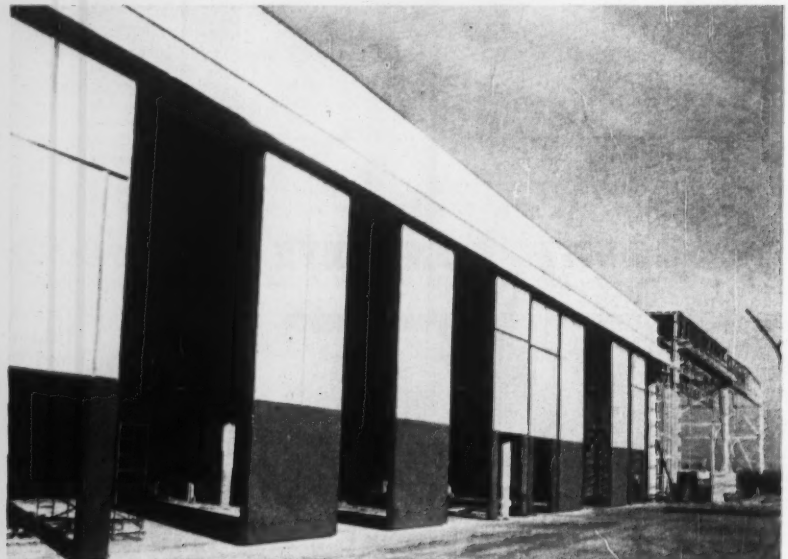
BIG UNIT HEATERS—630,000 Btu per hour—supported between the roof trusses (arrow) use high temperature water.



HOT WATER GENERATOR provides water at 400 F for the heating system. High temperature system saves on piping.



ALUMINUM SIDING was installed in lengths up to 30 ft from the outside.



SLIDING DOORS at end of building are 60 ft wide and full height. The interior columns are spaced to permit maximum use of the 160 and 200 ft bays.

Pumps are required to make up the friction drop. The hot water generators bring the fluid up to pressure so all the pumps have to do is offset friction. There are four pumps with a total circulating capacity of 770 gpm.

Make-up water requirements are small due to the closed circuit nature of the installation. Such make-up water as is needed is processed through a relatively simple zeolite softener.

Pipe required for the high temperature system is schedule 40 seamless steel pipe with all connections welded. This same pipe type would have been required for lower temperature hot water systems, but size for the high temperature system is less. This is offset to some degree by the fact that cast steel bodies have to be used for valves and pumps. Even so there is a substantial cost saving.

Another cost savings results from the lower operating costs in pumping less water. But this is considered to be very nearly offset by slightly higher pump maintenance costs.

• **Credits**—The new Douglas facility was designed by Holmes & Narver, Inc., with John H. Hancock as project coordinator. General contractor is C. L. Peck Construction and Realty Co. of Los Angeles. Steel fabrication and erection was handled by Bethlehem Pacific Coast Steel Corp.

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Radial Cone
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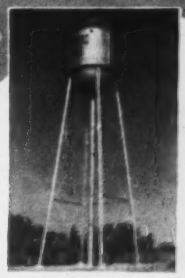
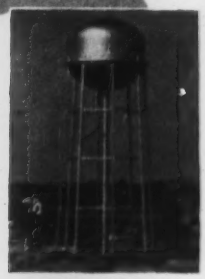


Hemispherical Bottom
100,000 gal.



Double Ellipsoidal
500,000 gal.

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Make sure you don't wear blinders when you invest in king-sized crawler power!
Make sure every dollar you invest buys the top pay-off power features. Look to the International TD-24 for the most profitable king-sized crawler performance your money can buy!

Make sure you don't dissipate dollars on a king-sized machine with load-limiting, "dead-track drag"!
The useful load of any king-sized, steering-clutch crawler is limited to what it can pull or push on turns. "Dead-track drag" hogs horsepower!

Exclusive and years-proved Planet Power steering gives the TD-24 full-time live power on both tracks. Upgrade or down, the TD-24 pulls or pushes its big loads on the turns or straight ahead, *with both tracks!*

Make sure you don't drop big money in high-priced time losses with "service-nervous" engine clutch complications!
The TD-24 gives you the operating ease, power-transfer efficiency, temperature-immunity, and service economy and simplicity of the International Cerametallic-faced engine clutch. And heat-defiant, long-lasting Cerametallic facings have amazing resistance to wear!

In your king-sized tractor, make sure you get your big money's worth—by getting the cycle-speeding advantages of TD-24 on-the-go shifting!
And compare how the TD-24's exclusive two-speed planetary system gives instant, stall-preventing Hi-Lo shifting without declutching in either the Torque-Converter or Gear-Drive models. You also get the added advantage of "no-stop" shifting with exclusive synchromesh transmission in the Gear-Drive model.

Make sure you don't fizzle away big finances by handicapping your operator—give him a break!
Give him TD-24 flush-deck design, control-tower vision, and reach-easy finger-tip controls to increase operator comfort and performance. Give him "one-engine" simplicity for seconds-fast starting and dependable diesel operation. Give him ALL of the dozens of other king-sized production-boosting TD-24 advantages!

Make sure you invest wisely and get full dollar value in giant-sized performance. See your International Construction Equipment Distributor for a TD-24 demonstration!

a king-sized crawler -sized performance!

With the TD-24 Torque Converter model as pusher, four International 75 Payscraper units prove able to outperform a fleet of six competitive self-propelled scrapers! Contractor, Terra Construction Co., Great Bend, Kansas, is handling a 500,000 cu yd grading job on Kansas 15, near the Nebraska line. "Perfect performance from all our International equipment," states Job Superintendent Weller.

"Where our other tractors failed this TD-24 has the stuff to get the job done," reports Mike Cashen, for Cashen and Erickson, Hibbing, Minnesota. "It is fast, easy to maneuver, and the only tractor we found that could load in these rocks." The job is building a tailings settling pond at a new Taconite plant in the Mesabi Iron Range. Because it's tough, the TD-24 wins the job of push-loading three self-propelled scrapers, and 'dozing boulders aside!

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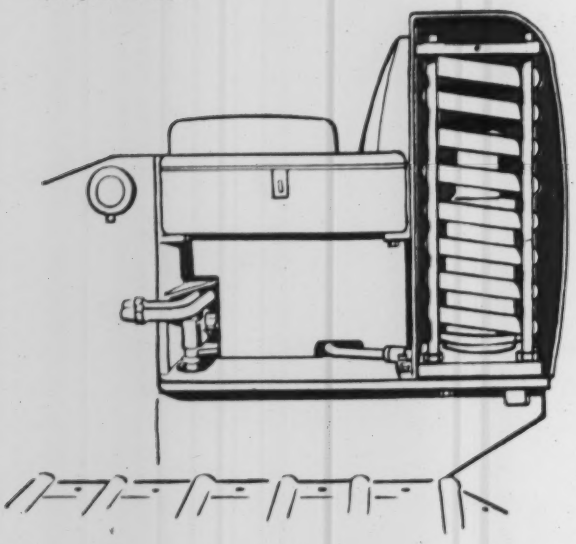
A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Exclusive Hydro-Spring reduces the effects of shock forces by an actual 67%, or more. Only International Drott gives you Hydro-Spring advantages.



How patented Hydro-Spring increases equipment life and capacity

Exclusive International Drott Hydro-Spring is a hydraulic cylinder enclosed in a heavy-duty *locomotive-type* coil spring. Shock force displaces oil from main lift cylinders into the Hydro-Spring cylinder—extending it and compressing the big spring to absorb and cushion impact loads.

Owners declare that Hydro-Spring adds a whopping 25% to loader and tractor life—besides reducing downtime and boosting production!

Try Hydro-Spring, turned on and off, to prove a vital money-making difference between International Drott and unprotected front-end loaders! Measure the job-getting, yard-adding advantages of exclusive triple-power, pry-action break-out and other International Drott exclusives. And see how you can beat a fleet of limited-duty rigs with an *exclusive* Four-In-One. See your International Drott Construction Equipment Distributor for a demonstration.

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When you're semi-skidding heavy bucket-loads of material over rough terrain, and the skid-shoes contact a high spot abruptly, linkage isn't pounded—and your spine isn't mauled! *Shock-swallowing Hydro-Spring takes over. No pain—no strain!*

ADDING,

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frame-mauling, spine-smacking impact!

When you solidly set the Skid-Shovel or Four-In-One in tough material to apply famous bucket-heaping, pry-action break-out, you don't punish the equipment, or yourself. *Shock-swallowing Hydro-Spring takes over—intercepts "slam-bang" bumps!*

When you're using the Four-In-One in dozer position and plow into tough material like this hard-frozen soil, you don't overload hose connections with a tooth-jarring crash. *Shock-swallowing Hydro-Spring "gentles" trouble-causing forces by two-thirds, or more.*

When you dump a bucketful of rock in one sudden clatter, don't brace for a bump, or expect something to break loose. *Shock-swallowing Hydro-Spring cushions impact, thus cuts time loss, and practically eliminates hydraulic hose failures.*

FORMER POWER UNIT SALESMAN

switches engine brands

AS BUYER...

Lynn McMillen sold competitive units six years, but purchases International UD-18A for his crusher

If you've wondered what power unit salesmen would actually buy if they were in the rock products business, here's a clue.

Lynn McMillen, partner in McM Materials, Inc., St. Charles, Mo., states: "I sold competitive power units for six years, but this International UD-18A on our Cedar Rapids crusher is a good engine. We've had no major repairs on it in nearly two years' operation."

That's something to think about, an experienced engine salesman preferring a dependable International diesel when his profits depended upon production. And when you switch to Internationals you can choose from a full line of 16 diesel and carbureted power units—one for every job or driven machine. In addition to bonus-power, you'll get bonus-service from your always-available International Power Unit Distributor or Dealer. Call him soon.

This 125 hp International UD-18A six-cylinder diesel power unit puts a 5-yd truckful of gravel through the Cedar Rapids Junior Tandem Crusher in less than 200 seconds. Ten-yard trucks are filled in six minutes.

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors ... Self-Propelled Scrapers and Bottom-Dumps ... Crawler and Rubber-Tired Loaders ... Off-Highway Trucks ... Diesel and Carbureted Engines ... Motor Trucks

Floor-Mounted Machine Grinds Concrete Ceilings

A machine for grinding concrete ceilings now available, is designed for use on large jobs, such as concrete apartment houses. According to the manufacturer, an operator can finish about 4,000 sq ft a day from 8 to 10 ft. high.

Doing the grinding is a 9 in. fiber-backed disk driven by a ½ in. by 8 ft. long flexible tool shaft, powered by a ¾ hp totally enclosed motor. The grinding is done with the disk perfectly flat and running at 3,450 rpm, but to remove nails or fins it can be set at a slight angle.

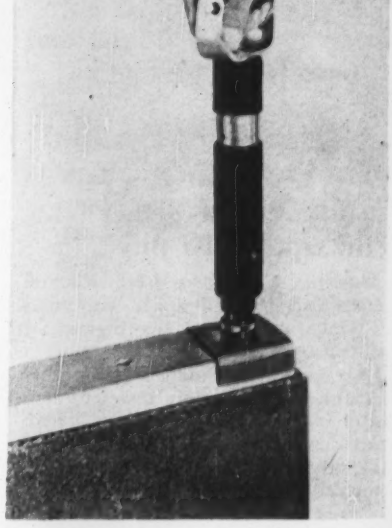
Height is adjusted by controlling the rubber-grip handle. A ratchet arrangement automatically locks the grinder in position at the desired height. A slight pressure is put on the grinding wheel by a spring and chain arrangement at the opposite end of the pivot arm. A turnbuckle is used to adjust the grinding disk, and a spring is built into the bearing housing supporting the disk to absorb shocks. Stow Manufacturing Co., 19 Shear St., Binghamton, N. Y.

Prefab Steel Buildings Can Be Custom Ordered

A line of rigid-frame steel buildings, suitable for warehouses, manufacturing plants, stores or community buildings, can be ordered in any of three standard widths—40, 50, and 60 ft—or in multiple units. They can be built in any length in multiples of 20 ft.

The straight sidewall buildings consist of a tapered frame, roof structurals and roof panels. The buildings are designed to give an unobstructed interior and have structural strengths to meet wind and snow load requirements, the manufacturer claims.

Only size, arrangement and accessories need be specified. The structural design and details are pre-engineered. Accessories include sliding and service door, pivoted windows, louvers, roof ventilators and plastic skylights. Inland Steel Products Co., P.O. Box 393, Milwaukee 1, Wis.



Hammer Is Piston-Driven To Stop Stud Ricochets

The VP Stud Hammer is claimed by the manufacturer to be the first piston-driven fastener on the market. The cartridge-firing hammer prevents ricocheting by pushing rather than shooting the nail stud into the work surface. It is used to fasten wood on sheet metal to concrete.

The fastener will handle three nail sizes—¾, 1¾ and 2¾ in. One type and load of cartridge is used to drive the studs. Depth of penetration is controlled by a setting of a power adjustment ring at the end of the barrel.

The stud hammer is portable, weighs about 6 lb and is supplied as a complete unit. Three spall shields—a round, flat disk for open work, a long narrow shield for corners and a shield for use on 2 x 4's—can be supplied on request.

The fastener is said to be safe from accidental firing since it cannot be set off until it is in actual work position. Velocity Power Tool Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.

Pan Forms Are Removed Easily with Jet of Air

A new metal-pan form, equipped with an air fitting, is freed from hardened concrete by compressed air forced between the form and the concrete. Two men are needed to strip the form; one presses an air gun against the fitting, while another grasps the form as it is blasted free. This method is said to protect the concrete surface from chips and scratches.

The Steeldomes, as they are named, have a void of 30 x 30 in. and a plan size of 36 x 36 in., including flanges. Standard depths are 8, 10, 12 and 14 in.

If attached or suspended ceilings are required, ceiling hangers can be installed through holes provided in the forms. Ceco Steel Products Co., 5699 W. 26 St., Chicago, Ill.

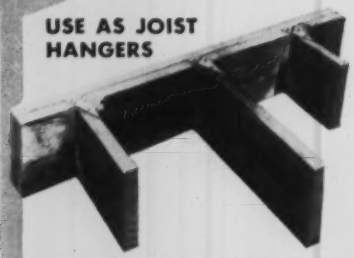
Electric Opener Designed To Fit Any Type of Door

An autmoatic, electrically powered door opener, said to be the first all-electric device of its kind, has been designed to fit any type of manually operated door. For converting manually opened doors, the all-electric unit is mounted above the door. For new construction, the unit is mounted in

Specify TECO Trip-L-Grip FRAMING ANCHORS

FOR STRONGER NAILED JOINTS

USE AS JOIST HANGERS



Eliminate Notching — Ledger Strips — Strap Hangers — Shimming — Floor and Ceiling Joists are Leveled. one size fits joints from 2" x 4" to 2" x 12"

USE FOR ROOF FRAMING

Securely anchors rafters to plate—Ties roofs down against uplifting winds—Automatically spaces trusses —Eliminates toe nailing.

FRAMING WITH TRIP-L-GRIPS IS ECONOMICAL - EASY - ACCURATE

Send for Free Booklets. Descriptive and technical data on the uses of Trip-L-Grips as joist hangers and for roof framing.

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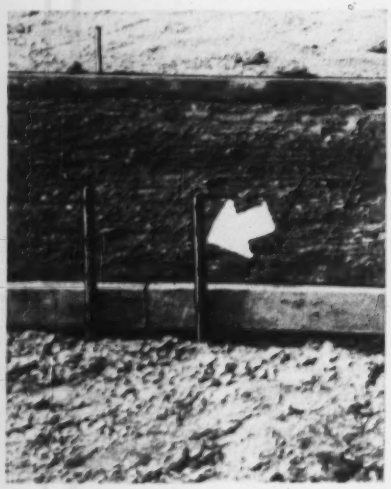
a floor case concealed below the floor.

Control devices on the electrical unit includes an automatic all-weather floor mat and electric-eye types, as well as a variety of semi-automatic switches. A built-in automatic check permits manual operation of the door in case of power failure.

Any 110 v electrical outlet can be used as a source of power. Electric Power Door Co., 2127 E. Lake St., Minneapolis, Minn.



Steel Stakes Rented With Option To Buy

Masonry contractors have recently been replacing wood stakes with solid steel stakes for flatwork, footings, curbs and bracings.

Dee Concrete Products Co. rents standard and heavy duty stakes to contractors with an option to buy. These stakes have points that will penetrate hard subgrades, and 12 nail holes on 1 in. centers with chamfered heads.

The company claims that three to five times as much forming can be set up as with wood stakes in a given time. A three pound hammer drives the steel rod fast and true. They last indefinitely and are available nationwide. Dee Concrete Products Co., 919 N. Michigan Ave., Chicago 11, Ill.

Tension Frame Protects Glass Door From Breakage

A new glass door is constructed of ¼ in. plate glass and a metal frame under tension to offer greater resistance to impact breakage.

The stiles of the aluminum frame are put under tension by concealed bolts drawing the glazing channels together. Pads and leaf springs in the lower glazing channel transfer the reaction, compressing the plate glass. This is said to increase the resistance of the glass to impact and to make the door a rigid non-sagging unit.

The "West Tension Door", as it is called, is suitable for operation with any type of automatic opening device, and can be furnished with offset built-in hinges.

The door is available in rough or polished plate glass. Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh 122, Pa.

Coin-Operated System Meters, Delivers Water

A coin-operated, self-serve water vending system for townships, city and county departments selling to private customers, such as water delivery services, is said to meter and deliver water from 10 to 4,000 gal.

The Self-Serve Water Vendor enables buyers to obtain water without the service of an attendant, the maker states, and can be regulated to operate with various size coins.

The device consists of a meter, control box, solenoid valve and coin box and comes wired and completely assembled, requiring connection of only two pipes and five wires to place in operation. Hydro-Control Div., Illes Power Control Co., 22700 Shore Center Drive., Cleveland 23, Ohio.

Fork-lift Attachment Lifts A 15,000 lb Load 14 ft

The Eimco Corp. of Salt Lake City has introduced a new heavy duty fork-lift attachment, featuring hydraulically-operated four-way tilting and leveling. The unit is mounted on a 143 hp crawler tractor.

Capable of lifting 15,000 lb to a full reach height of 14 ft, the machine is said to be suitable for almost any ap-

(Continued on p. 66)

HEAVY-DUTY TRUCK CRANE takes to the hills

Shows No Strain on Difficult Terrain, Even With 130 Feet of Boom and Jib

Hillside apartment buildings give residents a beautiful view. But their construction can raise some not-so-beautiful problems.

Each 6-story unit in this group of luxury apartments going up on the steep slopes of Montreal's Mount Royal requires the setting of 600 concrete joists. And each joist weighs 1000 pounds.

A Marion 43-M Truck Crane was brought onto the job after another firm, using competitive equipment, declared they were unable to accept conditions of the assignment. They felt their machine could not maneuver safely on the rugged site with the 100-foot boom and 30-foot jib needed to reach up and across the top floors.

The Marion has lifted and placed more than 6500 of the heavy joists at a rate of 160 per day. The dependability and adaptability of the 43-M Truck Crane on this difficult terrain has evoked praise from the building foreman.

Four-axle stability, heavy-duty construction of the machine, easy operation and precision placement with Marionair Control—these are the 43-M features which can solve unusual job problems for you, too. Ask your distributor for complete information about this or any machine in Marion's extensive line which meets your job requirements. Find out about today's 40-ton 43-M Truck Crane.

MACHINE	SHOVEL CAP. IN CU. YDS.	HOE CAP. IN CU. YDS.	CRANE RATINGS CRAWLER MOUNT MAX.* STABILITY	CRANE RATINGS CRAWLER MOUNT MAX. USABLE	TRUCK MOUNT MAX. USABLE
MARION 35-M	¾	¾	18T @ 10′	18T @ 10′	25T @ 10′
MARION 43-M	1	1-1¼	27T @ 10′	27T @ 10′	35T @ 15′
MARION 362	1½	1½-2	43T @ 12′	30T @ 15′	
MARION 87-M	Special Crane		150T @ 12′	75T @ 15′	
MARION 93-M	2½	—	80T @ 12′	50T @ 15′	
MARION 101-M	3	—	84T @ 12′	57T @ 15′	
MARION 111-M	4	—	110T @ 15′	105T @ 15′	

*For Comparison Purposes Only

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SEND ME information about **MARION** ..... yard shovels, ... yard hoes and ..... ton cranes (☐ crawler mounted ☐ truck mounted). ☐ Have a salesman call.

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Save money

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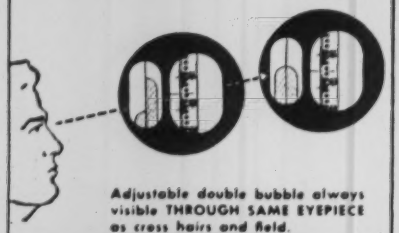

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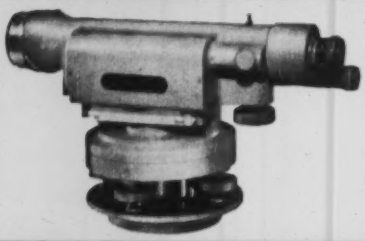

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☐ Theodolites ☐ Repair of present instruments, (any make)

NAME.....

ADDRESS.....

plication requiring reach and maneuverability.

For maximum visibility and greater work control, the fork lift seats the operator at the front of the machine. "Unidrive" transmission with independent track reversal for spin turns gives it versatility and operating ease even under close working conditions.

The folk lift is interchangeable with the Eimco front-end loader attachment and was designed to provide a unit flexible enough to meet materials handling jobs on uneven or sloping ground as easily as in prepared areas. Tines of the lift are readily movable to fit various widths of bins, pallets or bundles. EIMCO CORP., 634 SOUTH 4TH WEST, SALT LAKE CITY, UTAH.

Masonry Cutter Offers Several New Features

An auxiliary base stand designed for added machine stability and more convenient working height is announced by the manufacturer of the Model 888-MX Hydraulic Masonry Cutter.

Marketed under the name Hydrasplit, this portable stone and brick cutter and jointer now is supplied as standard with a hold-down bracket attached to the top blade. This automatically holds the drop-off material to the table for safety and convenience. Other new features included in the 1957 models are long-wearing cutting blades and an increased size adjustment from zero to 8 in.

Two larger, manual, heavy-duty models also are available, as well as a new powered, splitting machine with automatic equalizing, multi-chisel blades for production cutting of veneer and flagstone. PARK TOOL CO., BOX 44, ST. CLOUD, MINN.

Electronic Computer Available for Field Use

A portable general purpose electronic digital computer that is small and rugged enough for field use has been developed. Possessing a capacity similar to so-called small computers, it weighs only 200 lb and measures but 6 cu ft, excluding input or output attachments. Input and output is via electric typewriter and paper tape punch.

The midget computer, known as Recomp, was designed for the Air Force, but will be available for private users. The developer sees the machine applicable in construction for field-office determination of surveying data, highway earthwork quantities and other earth-moving quantities in heavy construction, and a number of other field uses not too closely related to construction.

Key to the unit's small size is use of tiny transistors instead of the vacuum tubes common to most computers now. AUTONETICS DIV., NORTH AMERICAN AVIATION, INC., 9150 E. IMPERIAL HIGHWAY, DOWNEY, CALIF.

Thermos-Type Skylight Reduces Heating Losses

A twin-domed plastic skylight is claimed by the manufacturer to reduce heating and cooling losses because of the dead air space between the two layers. The skylight is said to have a *U*-factor of 0.5.

The skylights are available in square, round or rectangular shapes. The three basic models—self-flashing, curb-mounting and bond type—range in size from 18 to 74 in.

The glass-fiber reinforced plastic domes are said to transmit a high percentage of outside light and because of the twin domes there is no interior condensation. A specially pigmented model is designed for school skylighting. CONSOLIDATED DOUBLE DOME SKYLIGHT, CONSOLIDATED GENERAL PRODUCTS, INC., HOUSTON, TEXAS.

Incinerator Built to Combat Air Pollution

Dravo introduces a new-type, completely integrated incinerator plant designed to aid in air pollution control. They claim "complete conversion of combustible organic waste in inert, harmless gases."

The new plant replaces batch feeding with conveyor storage and continuous feed to achieve higher temperatures and destruction of smoke, odor and fumes. It utilizes a large-volume, water-cooled furnace that omits a secondary chamber, while permitting ample volume. The plant employs wet scrubbers to help eliminate fly ash emission. Reduced operating costs are claimed.

Complete plants, known as Dravo Continuous Flow Incinerators, are offered in operating condition and subject to performance tests. They are available in unit sizes of 3 to 40 tons per hour. DRAVO CORP., PITTSBURGH, PA.

Tripod Weighs 9½ Lb. Features Universal Head

A tripod for levels and transits is introduced and claimed to have high stability not affected by wind and vibration. All metal parts of the 9½ lb. tripod are die cast from aluminum. Each of the wooden legs uses triangular truss construction with metal support braces. DAVID WHITE INSTRUMENT CO., MILWAUKEE, WISC.

These two Allis-Chalmers HD-21 Tractors—which net 200 cu. yds. per hour on an uphill haul for Grannis & Sloane, Inc., Fayetteville, North Carolina—are equipped with A-C Torque Converter Drive, standardizing on Twin Disc Torque Converter components.

"Torque Converter tractors net us 200 cu. yds. per hour ...and the haul is uphill all the way!"

That's the report from Fred Hauck, hard-working superintendent of Grannis & Sloane, Inc., Fayetteville, North Carolina.

He's talking about two Allis-Chalmers HD-21 tractors, working on a 3,800,000-cu. yd. grading and excavation job at Duke Power Company's new Plant Allen in Belmont, North Carolina.

They're used to push-load motorized scrapers in making a 6300 ft.-long discharge canal—a 2,200,000-cu. yd., *uphill* earthmoving job. With the torque converter-equipped tractors, Mr. Hauck is hitting well over 200 cu. yds. per hour on a 1500-ft., one-way haul—most of it on a 5% *uphill grade* out of the canal.

"These HD-21's, with torque converters," says Mr. Hauck, "have made one of the roughest jobs we've ever tackled much easier. They've saved us a lot of time and money."

Torque converter drive offers *you higher work output in less time,* and *longer equipment life* because it matches power to load demand, *automatically,* thus minimizing or eliminating gear shifting . . . it *eliminates* harmful engine lugging and stalling . . . it cushions *out*—through *fluid* connection — overloads, shock loads and vibrations — providing *longer tractor life with less maintenance.*

For these reasons, Allis-Chalmers designed torque converter drive into the HD-21, as standard equipment (it is optional on the HD-16). Since the inception of torque converters in crawler tractors in 1940, Allis-Chalmers has *standardized* on Twin Disc Torque Converter components.

Specify a torque converter for *your* next HD-16. For details on Twin Disc Torque Converters—*single-stage and three-stage* — request Bulletins 508 and 135-E, respectively.

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TWIN DISC

Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

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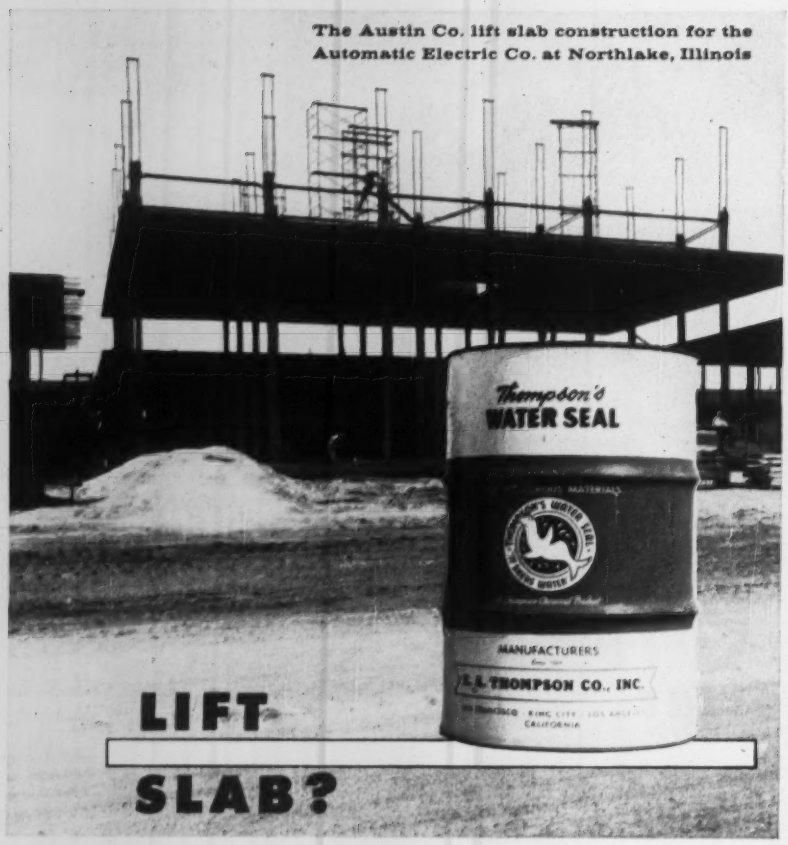
The Austin Co. lift slab construction for the Automatic Electric Co. at Northlake, Illinois



here's the West's Answer to an Eastern Concrete Question!

What curing and bond breaking agent can deliver hard, clean surfaces?

Thompson's Water Seal proved to be the answer for a well known national construction firm, The Austin Company—and for their client, Automatic Electric Co. It was used on 400,000 sq. feet of lift slab and precast wall panels for this huge plant at North Lane, Illinois.

If you want *one* sure curing, separating and form-sealing method, it will pay you to specify Thompson's Water Seal for all types of concrete construction.

THOMPSON'S (deep penetrating) WATER SEAL is Nationally distributed by
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MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929

For complete specifications, write for 1957 booklet

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Publications

Tools—Some 1,500 tools used by builders in the trowel and general construction trades are described in the 1957 Tool Catalog just issued. The 92 page book features building tools that range from the simplest hand tools to husky power equipment used in light construction and building industries. Many new tools are introduced to the market, and a masonry guide is included to help masons and contractors lay more bricks better. Also included are a new plastering gun, a revamped section of general contractor's tools and equipment as well as hoists, jointers and safety equipment. GOLDBLATT TOOL CO., 1910 WALNUT ST., KANSAS CITY 8, MO.

Electrical controls—A series of seven catalogs, 57-S1 to 57-S7, describe automatic transfer switches, remote control switches, magnetically held contactors, relays, solenoids and electric plant controls—AUTOMATIC SWITCH CO., FLORHAM PARK, N. J.

Repair of spalled masonry—A brochure entitled "Permanent Repair and Restoration of Cracked and Spalled Concrete and Other Masonry Structures" gives detailed instructions for performing such work with epoxy-based industrial, polyplastic alloys on many types of structures, including buildings, tanks and vats, sewers and water system chambers. PERMAGILE CORP. OF AMERICA, 37-23 33RD ST., LONG ISLAND CITY 1, N. Y.

Adding chemicals—A 4 page brochure describes features and operation of Model F-1400 Fluo-Chlorinator, which adds controllable quantities of fluoride and chlorine solution to potable water supplies. CATALOG 70F140, FISCHER & PORTER CO., 36 JACKSONVILLE RD., HATBORO, PA.

Road widener—A new catalog covering the Gar Wood-Buckeye Hi-Way Widener now is available. The widener excavates and finish-grades a highway widening trench in one pass. Requiring only one man to operate, it digs a clean, flat-bottomed trench, ready for concrete or bituminous material. Pouring can be done without forms or with outside forms only. GAR WOOD INDUSTRIES, INC., CUSTOMER SERVICE DEPT., WAYNE, MICH.

Engineering instruments—Catalog 50 is Gurley's revised catalog of engineering instruments. A 2-color, profusely illustrated 72 page book, it features tables that make it possible to quickly locate detailed information, recent models of

Buffalo-Springfield 3-Wheel Roller on a widening and bituminous resurfacing job.

This 3-Wheel Buffalo-Springfield Roller is compacting earth fill for new pavement.

Buffalo-Springfield 3-Wheel Rollers speed compaction on fill consisting primarily of slate refuse from a coal mine.

Here a Buffalo-Springfield 3-Wheel Roller compacts crushed stone base for new highway.

To compact largest *variety* of material, use Buffalo-Springfield's 3-Wheel Roller

Buffalo-Springfield Heavy-Duty 3-Wheel Rollers are long-time favorites for handling the wide variety of materials found in fills, subgrades and bituminous pavements. Variable weights in 10-14 and 12-15 ton sizes, power roll brakes, tapered roller bearings on *all* rolls . . . assure widest range of use, unequaled safety, maximum maneuverability, smoothest performance and longest operating life.

The Buffalo-Springfield 3-Wheeler's time-proven 4-speed transmission is an unmatched assembly built for outstanding performance and durability under severe load conditions. Torque converter drive with 2-range transmission is also available as optional equipment.

When *one* roller must do *many* jobs, the Buffalo-Springfield 3-Wheel Roller is your best buy. Ask your nearest Buffalo-Springfield distributor today for all the reasons *why* Buffalo-Springfield 3-Wheel Rollers are top choice for multi-purpose compaction regardless of the type of material to be compacted.

Write today for a copy of the new 3-Wheel Roller Bulletin, S-72-156.

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pumping something special?	check these special features available with Yeomans Vertical Wet Pit Centrifugal Pumps*
sand, glass particles and other abrasives	*Lubri-Vac*® reduces by 95% the failure of bearings due to scoring by abrasive particles. Lubri-Vac constantly flushes bearings with lubricant, keeps foreign matter away. (An exclusive Yeomans feature included on all heavy-duty pumps.)
ash, fly ash, cinders, bits of coal, corn foots and other solids contained in drainage	A cradle pump with protective sleeves to protect shaft. Special manganese steel parts. Yeomans pumps including these features will give long life under the most severe abrasive conditions.
potassium cyanide, sulphuric acid, jet fuel, melted naphthalene and other toxic or volatile liquids	Shaft seal is not under liquid pressure with Yeomans Vertical Wet Pit Pumps. This feature eliminates the leakage hazard which is present with horizontal pumps.
molten phosphorous, acetic acid, hydrochloric acid, black liquor and other corrosive liquids	Whatever the corrosive and/or abrasive liquid to be pumped—Yeomans has special ferrous and non-ferrous alloy parts to handle it.

*Vertical Wet Pit Centrifugal Pumps save floor space, require no priming —no costly liquid leaks as stuffing boxes are not under liquid pressure. Capacity range from 5 g.p.m. to 10,000 g.p.m.

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. . . Publications

instruments described in detail and an outline of other Gurley publications. W. & L. E. Gurley, Troy, N. Y.

Roller bearings—Now available is a new booklet, "For Extra Hard Work," describing the savings and benefits of sleeve-type roller bearings to track type tractor owners. The booklet (No. DE707) explains through do-it-yourself examples and illustrations how and why sleeve type bearings are able to withstand greater loads and shocks without damage. It lists the hidden extras of the sleeve-type bearings and the reasons for "roll true" performance. Advertising Div., Caterpiller Tractor Co., Peoria, Ill.

Tractors—Two manuals for operators of the Eimco Model 105 tractors now are available. Manual B-L1055, on the Tractor-Excavator, offers tips for efficiency in operation as well as information on preventive maintenance. Its illustrations emphasize the role of the operator in obtaining maximum performance, and safety precautions are included. The Front-end Loader Booklet, B-L1056, covers efficient operation of this attachment, and also offers tips on operation of the fork lift attachment. Eimco Corp., 634 South Fourth West, Salt Lake City, Utah.

Pumping—A new handbook, "Selecting Power for Pumping," (10E716) has been released by Caterpiller Tractor Co. This booklet is useful to those who have a pumping operation. It contains a checklist of features necessary for continued dependable operation on pumping jobs. Step-by-step, the list describes the requirements that an engine must have, backing them with illustrations and examples of efficient installations. Advertising Div., Caterpiller Tractor Co., Peoria, Ill.

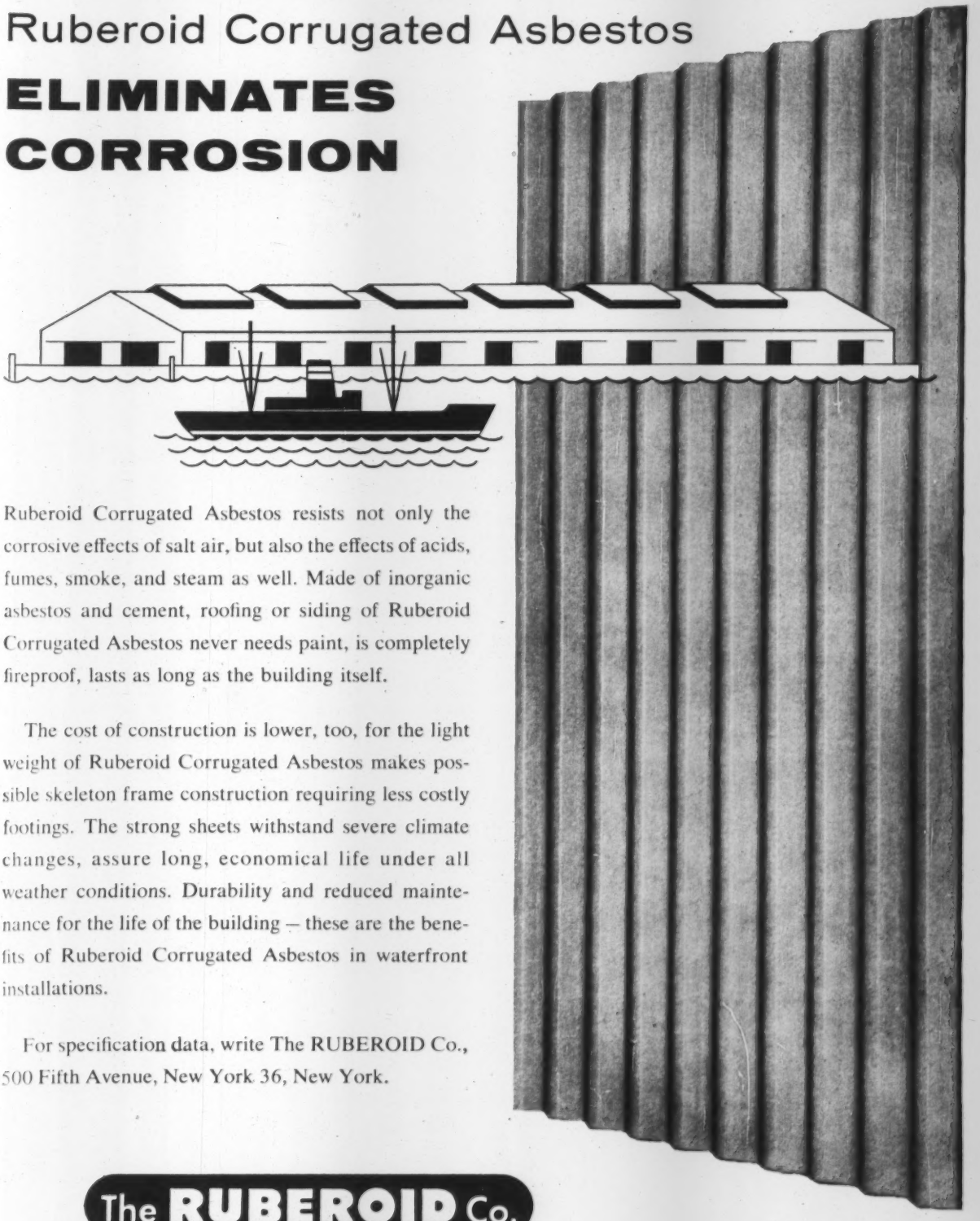
Ready-mix plants—The complete lines of Blaw-Knox equipment for concrete and bituminous paving, ready-mix plants and general construction are illustrated in Bulletin No. 2530. In addition to the general descriptions of some 14 basic items of equipment, the bulletin lists numbers for other bulletins describing specific equipment, which are available upon request. Blaw-Knox Co., Construction Equipment Div., Advertising Dept., Mattoon, Ill.

Road equipment—Bulletin No. HWC 541 on road machinery, being offered, describes in detail each of Huber-Warco's motor graders, tandem rollers, three wheel rollers and the maintainer. Huber Warco Co., Marion, Ohio.

for WATERFRONT INSTALLATIONS, too–

Ruberoid Corrugated Asbestos

ELIMINATES CORROSION



Ruberoid Corrugated Asbestos resists not only the corrosive effects of salt air, but also the effects of acids, fumes, smoke, and steam as well. Made of inorganic asbestos and cement, roofing or siding of Ruberoid Corrugated Asbestos never needs paint, is completely fireproof, lasts as long as the building itself.

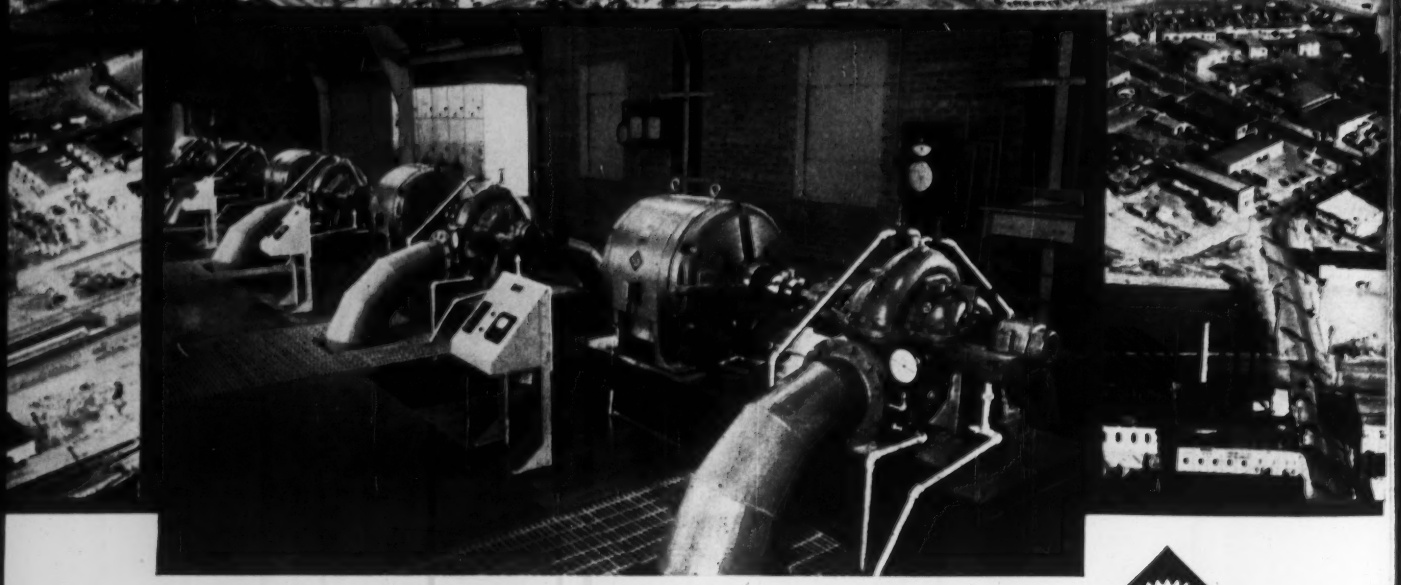
The cost of construction is lower, too, for the light weight of Ruberoid Corrugated Asbestos makes possible skeleton frame construction requiring less costly footings. The strong sheets withstand severe climate changes, assure long, economical life under all weather conditions. Durability and reduced maintenance for the life of the building – these are the benefits of Ruberoid Corrugated Asbestos in waterfront installations.

For specification data, write The RUBEROID Co., 500 Fifth Avenue, New York 36, New York.

The RUBEROID Co.

ASPHALT AND ASBESTOS BUILDING MATERIALS

Pueblo,



Allis-Chalmers pumps, motors and control at the District No. 2 Water Works—two 12 x 10 SHS pumps, 3500 gpm, 290 ft, driven by 350-hp, 1770-rpm motors; and three 12 x 10 SH pumps, 600 gpm, 290 ft, driven by 600-hp, 1770-rpm motors.

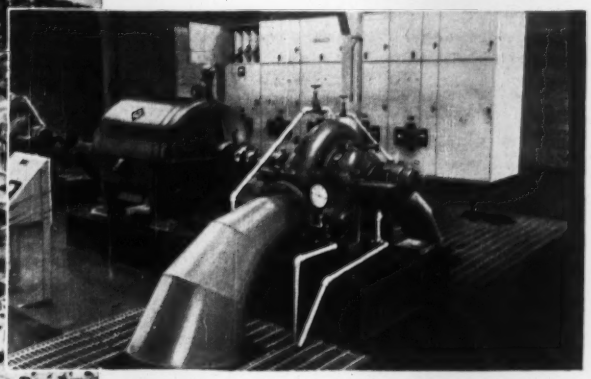
A-C ALLIS-CHALMERS

A-5397

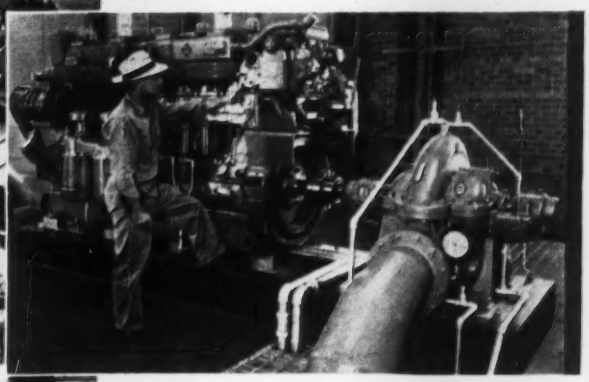
Colorado

increases pump capacity...

Confidently purchases Allis-Chalmers equipment for continued satisfaction based on proven past performance



One of two 12 x 10 SHS pumps, 3500 gpm, 290 ft, driven by 350-hp, 1770-rpm motors, and line-up of Allis-Chalmers Type H high-interrupting capacity motor control.



One of two 12 x 10 SI pumps, 3500 gpm, 290 ft, driven by Allis-Chalmers 340-hp, 1200-rpm diesel engines.

THIS progressive industrial city of 100,000 expects to double its population in less than 30 years. This growth pattern called for increasing pump capacity to 41 mgd and provisions for future expansion. Because Allis-Chalmers equipment had given dependable, low-maintenance, high-efficiency service in the past, Pueblo assured itself of outstanding service by again specifying Allis-Chalmers.

Your community, too, can save time and money—assure itself of the same satisfaction—by conferring with Allis-Chalmers engineers early in the planning stage of your public works project. As the leading builder of public works equipment, Allis-Chalmers offers unequaled experience, vast resources of technical skill and modern, dependable equipment

Your local A-C representative will gladly call in a team of Allis-Chalmers experts to help you or your consultants plan a modernization or expansion program. Call him, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

Allis-Chalmers Public Works Equipment

- Hydraulic turbines, generators
- Pumps
- Compressors
- Condensers
- Blowers
- Motor-Generators
- Motors
- Transformers
- Switchgear
- Butterfly Valves
- Diesel Engines

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✓ happy balance between dependable performance and moderate cost

Tru-Rol *precision, steel-cage, heavy-duty bearing with contoured guide lips assuring true right-line rolling, maintained roller alignment and thin oil film.*

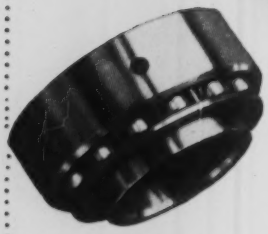
● Rollway's *TRU-ROL* Steel-Cage Bearings afford wide latitude in balancing *dependable* performance, *long* life, and *high load* capacity against *moderate* cost. They rate high in any comparison on a cost-performance basis.

A choice of stamped steel retainers with contoured guide lips, or steel segmented retainers assure true rolling and an evenly distributed *thin* oil film — *big factors in reducing power losses and heating.*

"Crowned" Rollers Relieve End Stress

TRU-ROL offers the extra advantage of a finish-ground "crown" radius on the roller ends. That relieves high end-stress and insures uniform load distribution over the entire length of the roller. The result: *TRU-ROL* Steel Cage Bearings carry heavier loads over longer periods without excessive end-fatigue. They are less affected by slight misalignment or shaft deflection.

Investigate *TRU-ROL* Steel Cage Roller Bearings before selecting any bearing in the medium price range.



TYPE D

Rollway Metric Series Steel Cage Roller Bearings

● Rollway Metric Series Steel-Cage Bearings offer the greater load capacity of solid cylindrical rollers, plus the true right-line rolling of trunnion rollers turning in a rigid steel cage. There's no roller skew, no pinch out, no cam action. Design permits maximum bearing capacity . . . within small space . . . at moderate cost.

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Rollway Bearing replacements are available through authorized distributors in principal cities. Consult your classified phone directory.

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ROLLWAY BEARING CO., INC. SYRACUSE, N.Y.

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Building Collapse Laid To Careless Undermining

It was careless construction on an adjoining site that brought down an 11 story building, killing nine persons, in Rio de Janeiro last February. That is the opinion of Saturnino Brito, president of an engineering organization now urging legislation to prevent similar accidents in future.

While excavation work was going on next door, the ill-fated structure, the 12 year old Rua Rosario building, suddenly developed cracks in its walls and floors. Engineers disagreed as to whether it was in danger, and even after a bank, which occupied the first three floors, had moved out in alarm and urged other tenants to do so, city building inspectors continued to insist that the structure was safe.

Such was the state of affairs on Feb. 19, when the structure crashed down into a narrow downtown street, burying a number of persons. It was reported that a city engineer had inspected the building 30 minutes before the failure and called it safe.

In Mr. Brito's opinion, the building's concrete pier foundations—even though they were not joined by tie beams—were safe so long as normal precautions were taken. What the inspectors did not know, however (or take into consideration), was that the builders excavating on the adjoining site were doing nothing to maintain lateral support for the soil under the existing building.

Since the mishap, a number of other buildings in the Brazilian capital have been declared unsafe because of neighboring excavations.

Eastfoto

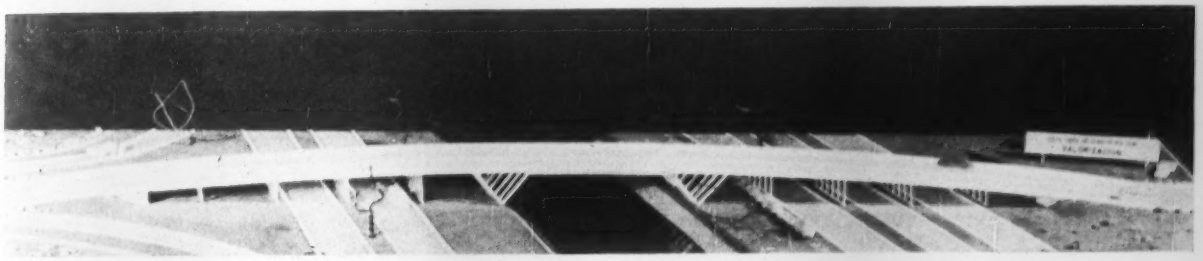
Yangtze River Span Takes Shape

One of Asia's most massive river crossings will be this new combination highway-railway structure over the Yangtze River. Built—according to Chinese information—by Red Chinese and Soviet Russian engineers, the 3,280 ft structure will carry a double-track railway line atop the trusses, and vehicular and pedestrian traffic below. The 90 ft wide stone-faced piers are said to be founded on clusters of reinforced concrete caissons, 54 ft in diameter, sunk to bedrock, then filled with concrete.

Canadian Government Finances Power Grid

Within a week of the federal government's offer of financial aid to the province of British Columbia for power development (ENR Apr 4, p. 17) Canada announced actual aid in the same direction for the Maritime Provinces. Speaking in the House of Commons, Federal Resources Minister Jean Lesage announced that the government will provide the high-tension transmission grid to link the separated power systems of the provinces of Nova Scotia and New Brunswick in the interests of overall economy.

The federal government also will furnish thermal power plants to feed into this grid, but will not provide financial assistance to the government of New Brunswick for completion of the Beech-



Bogota Plans 430 Ft Prestressed Bridge

Need for quick traffic relief dictated that a 430 ft prestressed concrete bridge, to span the Medellin River in Bogota, Colombia, be designed with a maximum of simplicity so that the bridge could be erected in the shortest possible time.

Flow conditions of the river made it necessary that the part of the bridge over the water be erected without shoring or falsework.

The central span of 87 ft will be composed of 12 prestressed beams. These will be precast and then prestressed on the adjacent parts of the bridge and slid into position. The beams will rest on corbels formed as extensions of the approach structures.

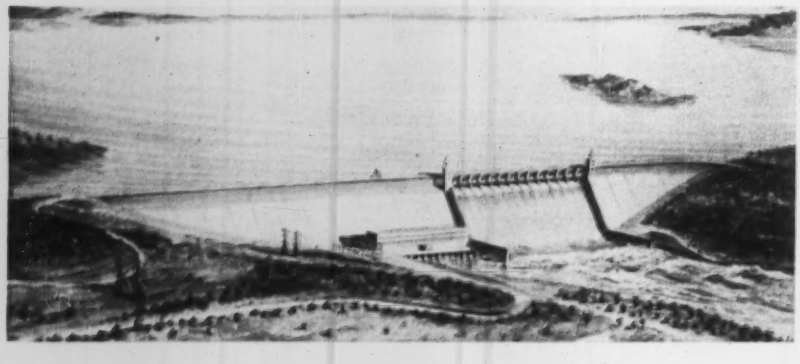
The approach spans, consisting of longitudinal beams, will be 50 ft. long.

The bridge supports are ordinary reinforced concrete columns that, in general, are not connected monolithically to the superstructure. Adjacent, to the central span, the columns form a V.

Zuleta & Hermandez, Bogota, are the designers.

wood hydroelectric power scheme on the St. John River.

The Northwest Power Commission (an agency of the federal government) will be the body through which these power developments are carried out. Orders are to be placed soon for necessary equipment for a 50,000 hp thermal station. For the federal government of Canada to get into the power generation and distribution business, anywhere but in the Northwest territories where it has to do this, is a development surprising to most Canadians.



India Begins Another Big Dam

Under what is reported to be a $94.5 million contract, the Hindustani Construction Co. has begun construction for the Indian government of a straight concrete gravity dam on the Rihand River about 100 miles due south of Benares.

To be 296 ft high and 3,142 ft long, the dam will create a 8.6 million acre ft reservoir, which will serve both irrigation and power. A 285,000 kw power plant is part of the contract.

Located in remote undeveloped country, the dam project already has involved a considerable amount of difficult mountain road building. One of the key operations on the job will be to keep it supplied with cement over 50 miles of this road from the mill. According to Mack Trucks, Inc., whose Mack-Gramm bulk cement trucks will be used, the schedule the contractor has laid out provides for two trips a day for each of the 100 bbl units.

The dam project—which will receive U.S. technical help and $21 million of financial aid—was designed back in 1949 by the International Engineering Co. of San Francisco. This U.S. company, along with the Colorado Agricultural Research Station, was responsible for preliminary investigations.

AXIS of 296 ft high dam to be completed in six or seven years.

Railroad to Be Rebuilt Despite Mideast Tension

Plans for the immediate reconstruction of the Hejaz Railway, which connects Syria, Jordan, and Saudi Arabia, have not been shelved because of the recent difficulties between two of the countries involved. A preliminary report submitted by the International Resources, Engineering and Exploration Group of Washington, D. C. is under consideration of the Hejaz Railway Commission, and it is expected that tenders will be requested within a matter of weeks.

The railroad, which runs from Damascus, capital of Syria, through Amman, capital of Jordan, to Medina in Saudi Arabia, was built early in the 20th century and for years was an important freight route. During World War I, the Allied forces under T. E. Lawrence destroyed the road between Maan (Jordan) and Medina, to disrupt Turkish supply lines. The damage was never repaired.

In 1956, after almost 40 years haggling, the three countries finally agreed to reconstruct the railroad, and the commission set up by them retained IREX to do the necessary survey and design. IREX consists of Jack Amman Photogrammetric Engineers, of San Antonio; Geophoto Services, of Denver; and Brown and Blauvelt of New York.

Precast Concrete Meeting Will Be Held in Germany

An international congress of the precast concrete industry will be held in Wiesbaden, Germany, from June 22 to 28, 1957. The purpose of the congress is to promote an exchange of experience on technical and economic problems and to cooperate in research.

In conjunction with the congress there will be an international exhibition of machinery, molds, transportation equipment, additives and aggregates used in manufacturing concrete.

Those interested in attending can apply to the Bundesverband der Betonsteinindustrie e.V., Bonn. Rhein, Hausdoffstrasse 191, Germany.

Japan's Largest Hotel Will Be Built in Tokyo

Construction of Japan's largest hotel will start this summer in Tokyo. Completion of the 8 floor, 500 room hotel is expected early in 1959.

Cost of the hotel will be $8.4 million. Pan American World Airways will share the financing with Japan Air Lines and several Japanese business concerns.

(*Intl. continued on page 78*)

THE OLIVER SUPER 88

"Saves as much as 50% over other equipment"

On this big $15,000,000 shopping center project, Jos. L. Muscarelle, Inc., well-known contractor of Maywood, N. J., has an Oliver 88 on a 5-day-a-week schedule. Working right through the winter—and in frozen ground—the 88 handled all trenching for sanitary sewers, water and electric lines and spot excavations as well as all backfilling. Odd jobs include loading trucks with sand at a nearby pit, as seen above.

The 88 is also used to excavate in cramped areas where steel beams have been erected—and where larger machines can't operate. Here, too, the compact, powerful Super 88 has set up some amazing cost records.

Averages 550′ per day of 5′ trench

So far, the 88 has dug over 25,000′ of trench ranging from 3′ to 11′ deep. Average production for 5′ trenches—at random lengths, in all directions—totals 550′ per day. Cost records show that the Oliver 88 saves as much as 50% in over-all costs over other ½-yd. equipment for this type of work. And the user reports, "No repairs, no breakdowns since the Oliver Super 88 was purchased"—8 months ago!

Ask your Oliver distributor for facts about the Super 88. Or write us for literature.

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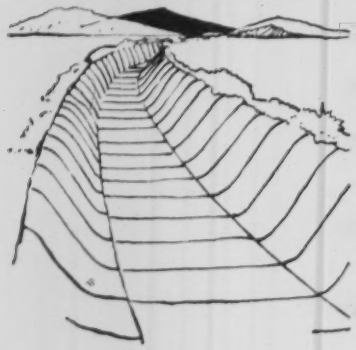

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Police Complaints Remove Calgary "Scramble Lights"

After three years of use, pedestrian "scramble lights" at three downtown intersections in Calgary, Canada, will be replaced by ordinary traffic signals to facilitate the flow of traffic.

The city council decided upon removal of the lights after strong objections to them were raised by the police and traffic departments.

Police complained that the system caused traffic to be blocked, required constant supervision and often led to difficulties with pedestrians crowding across intersections.

Israel's Port at Elath, on Red Sea, to Be Enlarged

Plans to extent Israel's Red Sea port of Elath at a cost of about $10 million have been announced by the Director General of the Ministry of Development. The plan calls for construction of a deep water port, and will involve berthing facilities for ships up to 6,000 tons. About $700,000 is slated to be spent this year to get the project under way.

It is believed the projected port development eventually will have the capacity to handle 1.5 million tons of freight annually. However, Israel officials are depending heavily on the eventual construction of a 30 in. pipeline to Haifa from the southern seaport, for its success. Included in the plan, therefore, are six wharves that will be able to handle 12 tankers simultaneously. One wharve accommodating two tankers will be built during the first stage of construction.

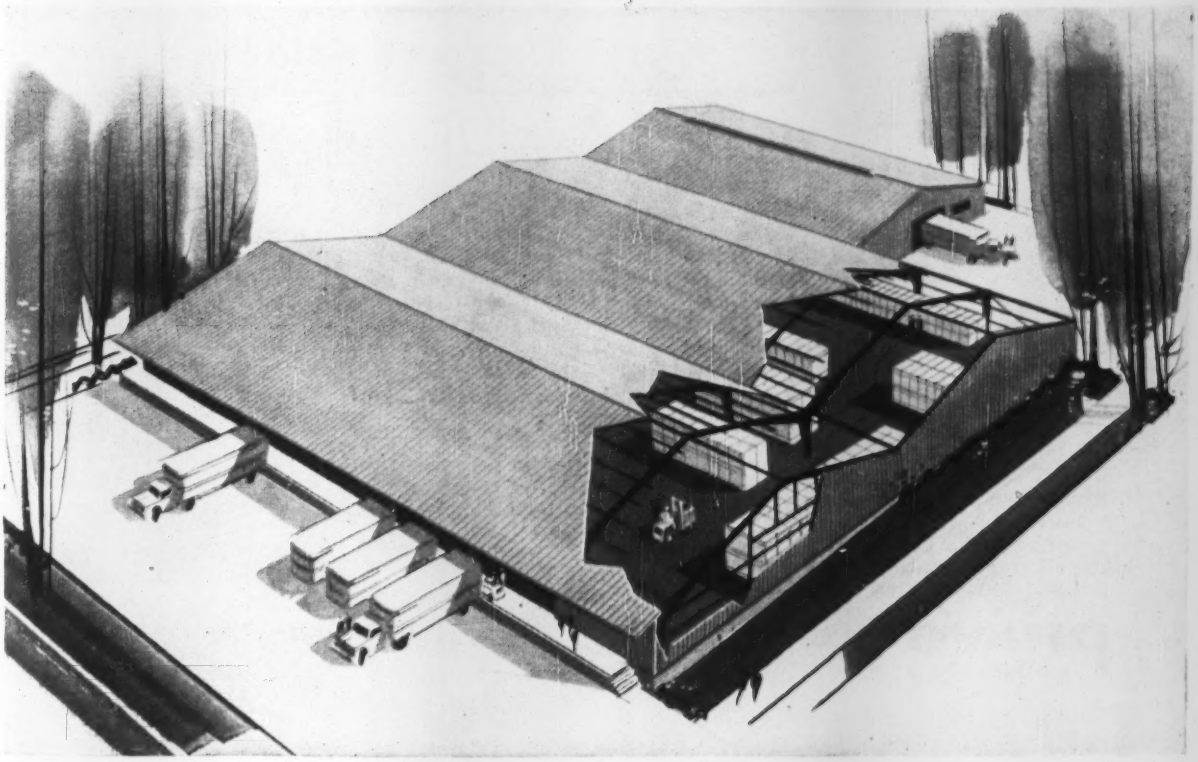
There will be facilities for local fishing boats, a commercial harbor, an oil port and a naval installation.

Hydraulic Researchers Will Meet in Lisbon

The seventh Congress of the International Association of Hydraulic Research will convene in Lisbon, Portugal July 25-31.

Meetings are scheduled to be held at the Laboratorio Nacional de Engenharia Civil, Avenida do Brasil, and inquiries can be sent to that address, according to Pierre Danel, director of SOGREAH, hydraulic laboratory in Grenoble, France, who now is serving as president of the International Association.

Three subjects for discussion are on the program: scale effect; cavitation; and hydraulics of water-intake works, tunnels and entrance channels.



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The sturdy, clear-span design of Stran-Steel buildings makes them ideal for efficient materials handling and provides maximum space for storage. In addition, new Stran-Steel buildings have a look of quality never before achieved in an all-steel structure.

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Under this attractive exterior is a rugged steel structure. At the peak and knee, the continuously welded rigid frame I-section steel plate beams are securely bolted together. Each frame is also permanently bolted to the foundation.

New Stran-Steel buildings are quickly erected at minimum cost, provide clear, unobstructed space for large equipment, and may be provided with such required accessories as overhead craneways or large access doors. With Stran-Steel buildings, you get the cost-saving features of a pre-engineered structure in a quality building that is fire-safe and easy to insulate. They are available in any length, with widths of 32, 40, 50, 60, 70, and 80 feet, and multiples thereof.

Up to $25,000 is available to finance these buildings through the Stran-Steel Purchase Plan. As little as 25% initial investment; up to 5 years to pay. Ask your Stran-Steel dealer for the complete story. He is listed in your classified telephone directory under Buildings—Steel.

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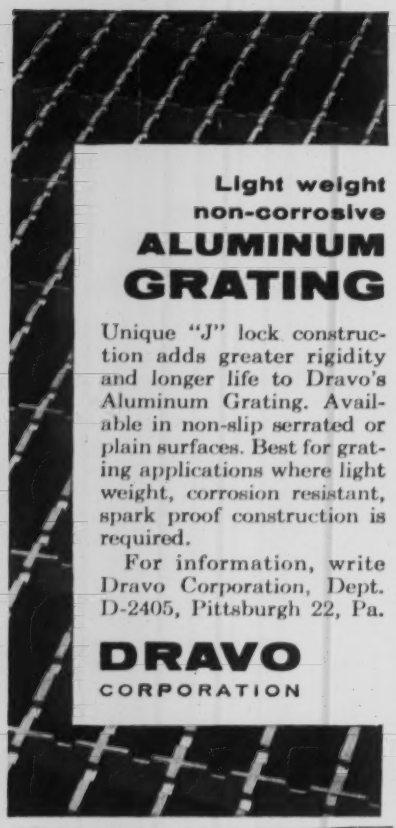
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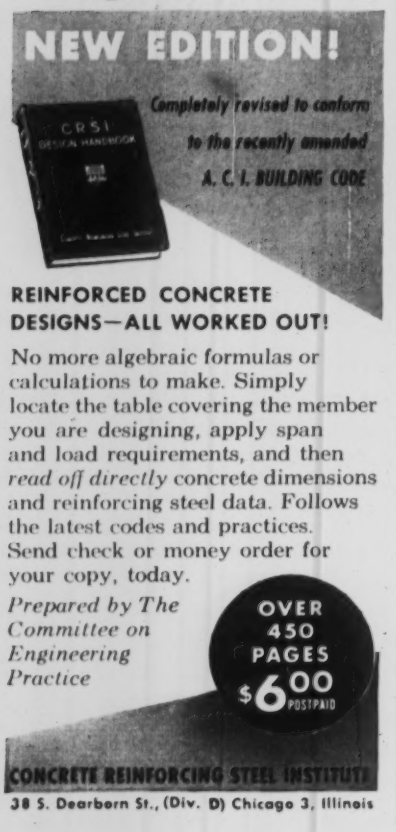
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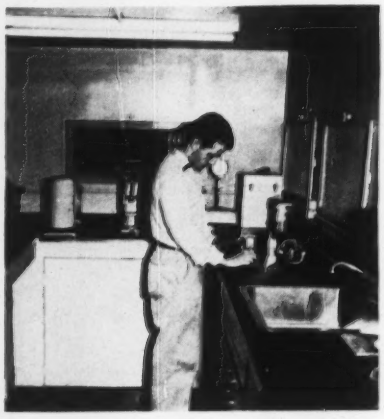
Field and Office

Mobile Laboratory Does On-the-Job Testing

A complete mobile testing laboratory to be used by the Bureau of Public Roads on overseas road planning and construction projects has been delivered to BPR officials. Fully equipped with standard soil and concrete tests, the laboratory is mounted on a four-wheel drive truck in a van with inside dimensions of 16 ft long by 7 ft wide. Four engineers or testing technicians can work comfortably.

Designed to be self-sufficient, the laboratory on wheels carries its own water supply, sinks, air compressor, air conditioner, vacuum pump and other utility equipment. Power is supplied by an electric generating set, which has sufficient capacity to light the laboratory and operate all of the test apparatus.

Equipment includes a portable 200,000-lb capacity concrete testing machine for 6 x 12 in. cylinder tests, soil testing apparatus. Designed by Soiltest, Inc., of Chicago, the laboratory can be used either on or off the road, equipment being stowed in special cushioned compartments while the truck is in motion.



Cut-Up Sections Form Tapered Frames

To get something different in exposed steel for the enlarged outdoor deck of the Alta Mira Hotel at Sausalito, Calif., standard steel sections were torch cut on a slant along their webs and the parts welded to build up tapered columns and girders.

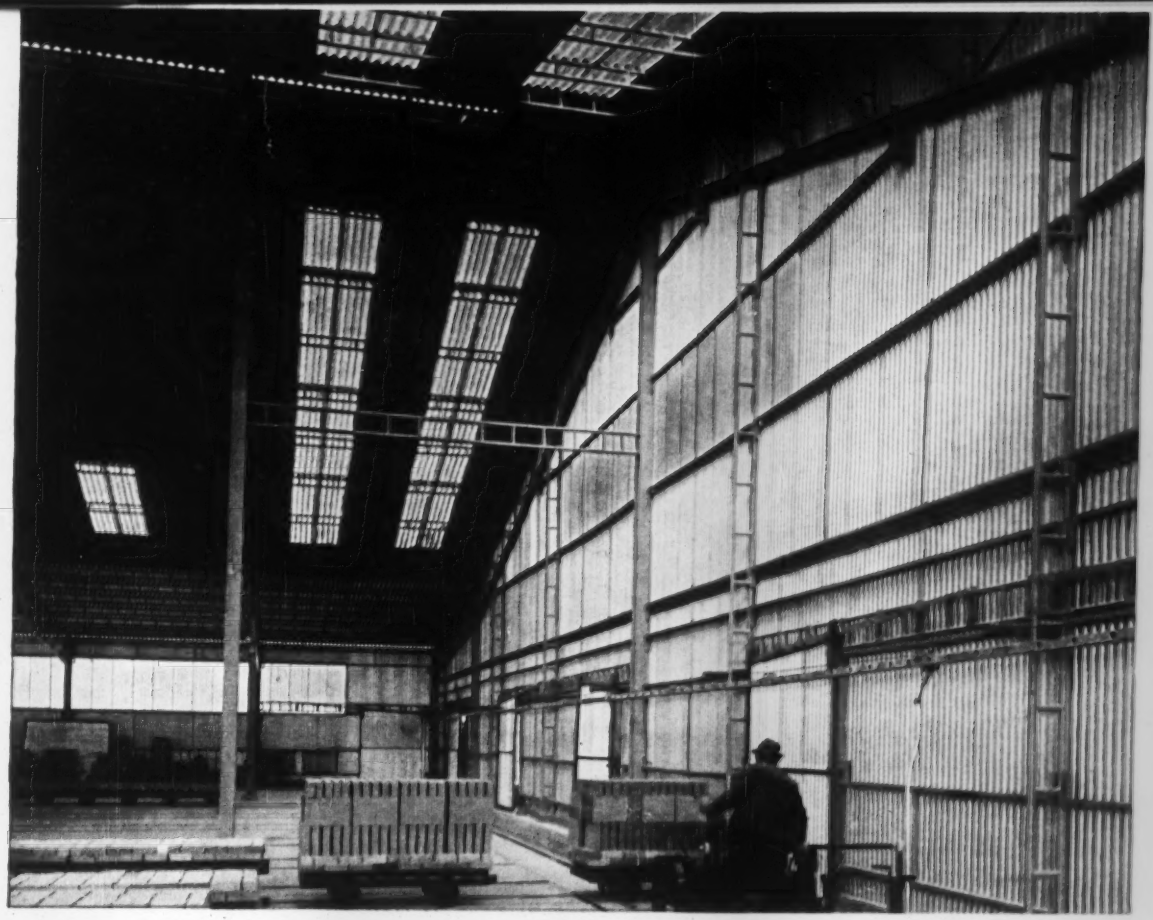
Triangular corner columns were fabricated of 18 WF 50 sections, cut along their webs on a slant so that the depth varies from 6 to 12 in. Three of these half sections were then welded along the webs at 120 deg angles to form a tapered corner column.

The main beams of the structure were built up in a similar manner. Two standard sections were cut, one on a slant and the other along the center line of the web. Each slanted section was welded at the webs as the bottom flange of the straight half section. The shallow ends of these built up girders were then butt welded.

The tapered design is said to have cut the weight of steel needed by 20 to 30%.

Secondary members supporting the deck consists of 24 WF 74 and 12 WF 28 sections. Ten inch seamless pipe was used for the rear columns.

John Brown was the engineer on design of the tapered steel members. Schrader Iron Works fabricated and erected the steel frame, and Gordon Hughes was the general contractor. All are from San Francisco.



Fire-retardant, shatterproof panels, made with HETRON resins, let the daylight into this plant of Davis Fire Brick Company, Jackson, Ohio.

Free Light

How to let nature subsidize your lighting with fire-retardant panels

To be sure of safe, fire-retardant panels, look for both these labels when you buy. Only HETRON-based panels (sold under fabricators' brand names) carry these labels, because only HETRON resins have inherent fire retardance.

Soft, cool light—light you can use—floods through these fire-retardant polyester panels.

Free light that can cover much of the work area you now illuminate electrically. Light that doesn't glare or fatigue and therefore improves efficiency. Light that reduces shadows, making your plant safer to work in.

You get an extra measure of safety when you use HETRON®-based panels for skylighting and windows. HETRON polyester resins have *inherent* fire retardance.

That's why HETRON-based panels have both UNDERWRITERS' listings and FACTORY MUTUAL approval. *Only* HETRON-based panels have these assurances of safe building materials.

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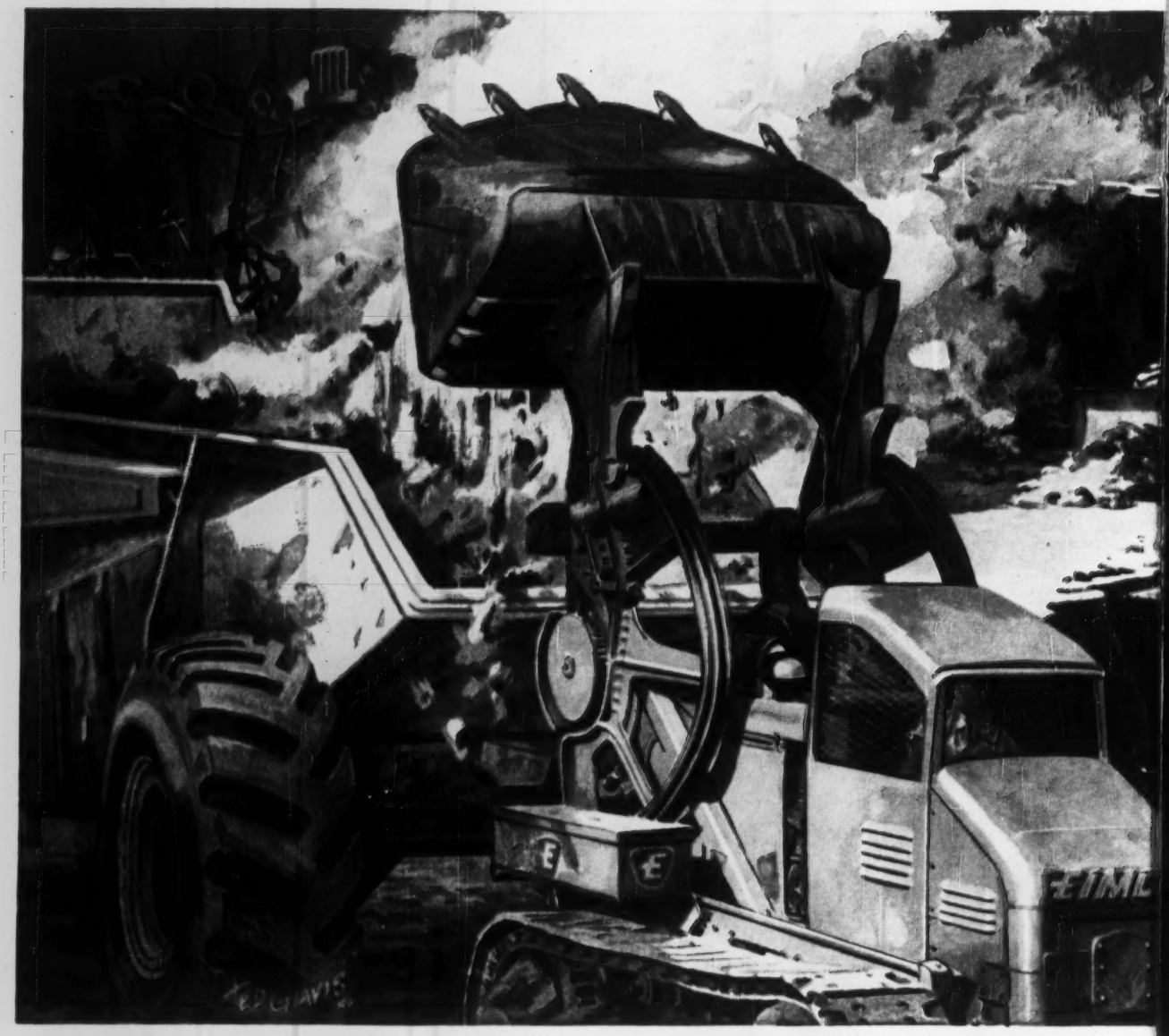

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And with the recent addition of Turbopower engines to the line, increased horsepower with greater efficiency is now available in the same size engine. These new Turbopower Diesels develop up to 17% more power on no more fuel —or the same power with a 15% saving in fuel.

Next time you order new equipment—or repower old—be sure to specify GM Diesel. It's America's FIRST CHOICE Diesel *because it does more work at less cost!*

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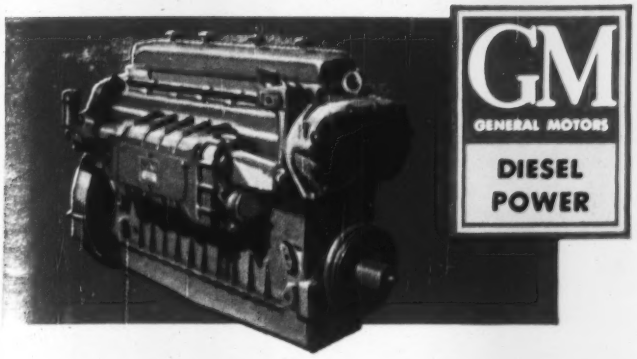

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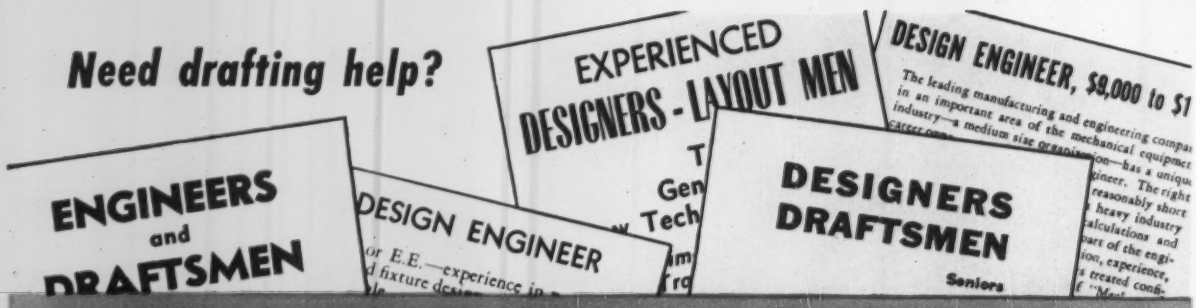

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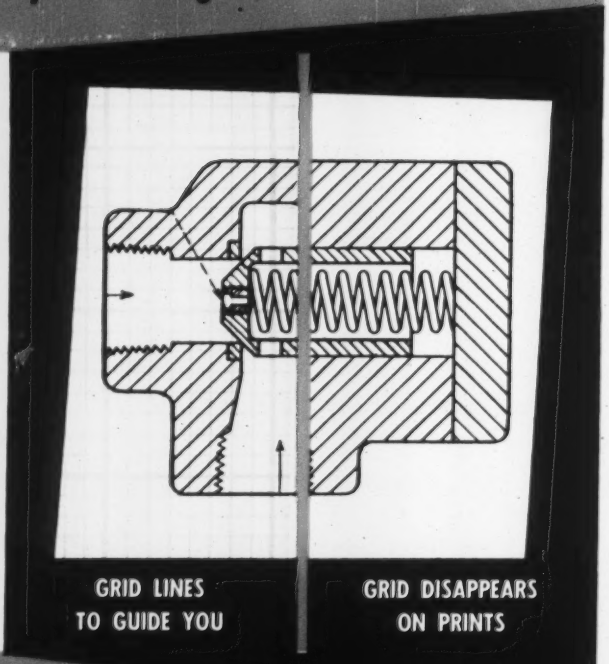

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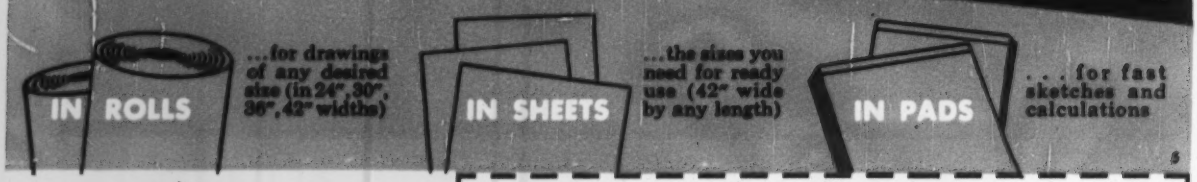
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Findings Recognized

Award goes for studies on stream reaeration

New York University's Founders Day Medal has gone to Donald J. O'Connor for research work on reaeration of streams, work that led last year to a doctor of engineering science degree for the award winner. The award was made April 12 to 34-year-old O'Connor, who is an associate professor of civil engineering at Manhattan College.

Professor O'Connor's work on "The Mechanism of Reaeration in Natural Streams" was first described by him to the Sanitary Engineering Division of the American Society of Civil Engineers at its October, 1955, meeting in New York. A paper co-authored by NYU's Prof. William E. Dobbins, and presented as a condensation of Professor O'Connor's thesis, appeared in the December, 1956, JOURNAL OF THE SANITARY ENGINEERING DIVISION, American Society of Civil Engineers.

What Professor O'Connor did is use the basic theory of turbulent flow to derive a theory for reaeration in streams. Reaeration is, of course, means to self-purification for natural streams in which deaeration has resulted from biological oxidation of organic matter. And up to now, the measure of a stream's ability to reaerate —or recover from organic pollution— has been derived from time-consuming collection of field data.

The research done derived a reaeration coefficient analytically, checked it experimentally, and compared it with field data from sanitary surveys on rivers. Laboratory and field findings checked the derived formulas satisfactorily.

Basing his work on the economy of using a stream's natural capacity to assimilate organic wastes, Professor O'Connor set out to describe the mechanism of reaeration, which is essential to the natural purification capacity.

He reviewed the theory of turbulence, related it to the rate of surface renewal (for it is only at the surface that a stream can take in oxygen) and arrived at formulas for reaeration coefficients (for both isotropic and non-isotropic turbulence) in terms of depth and slope of the stream and a coefficient of molecular diffusion, a measure of gas entry through the liquid film. It is pointed out by the author that the liquid film at the water surface is the controlling factor in the process of reaeration, and the effect of turbulence on the liquid film at the surface must be evaluated.

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Abel Wolman: Engineer Extraordinary

Howard Jacoby
Associate Editor

This June, at 65, Abel Wolman eases up on the teaching phase of a manifold career as professor of sanitary engineering at The Johns Hopkins University. As one aspect of this extraordinary engineer's career enters the twilight stage, pause is provided to examine in some detail the impact he has made, and no doubt will continue to make, on the engineering profession—particularly sanitary engineering.

Abel Wolman's life has been dedicated, consciously or unconsciously, to pointing the way. His greatest energies have been spent in the areas of conceiving, planning, searching review, teaching and just plain preaching. His results, although often monumental, are not to be found in the same type of concrete achievement associated with the names of such bygone greats as Allen Hazen, George W. Fuller or William Sedgwick. But his impact has perhaps been comparably great. A brilliant mind and dynamic personality have been his forte.

• **The big picture**—Many ardent admirers think of Abel Wolman as the foremost sanitary engineer of his day in the role of leading the profession to the top of the hill and pointing out the wide horizons beyond. This is almost always as far as he goes—others must proceed into the valley and erect the enduring structures.

In charting his course up the hill, Professor Wolman rarely takes an orthodox trail. To those who have followed him to the summit, he suggests a broad path to pursue beyond. Though not always free of pitfalls, this path is usually in the right direction.

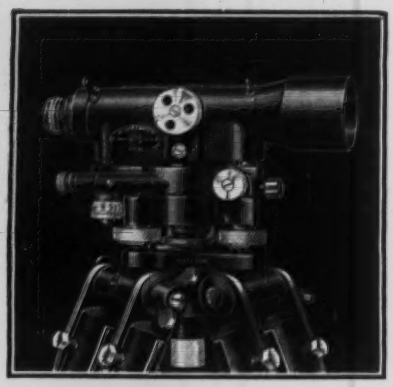
In essence then, Professor Wolman has attempted, and succeeded in the view of most, to make ever wider the water engineer's range of thinking. Moreover, by example and by dint of personality, he has been most influential in helping the engineering profession take its rightful place in higher deliberative councils which decide the fate of so many projects.

Abel Wolman's career has been extraordinary in magnitude. Few men have ever held so many jobs at one time and served so many extra-curricular activities. At the moment he is a member of the Atomic Energy Commission's Reactor Safeguard Committee and its Safety and Industrial Health Advisory Board, chairman of the Board of Consultants to Israel's National Water Planning Board and to the Middlesex County Sewerage Authority, consulting engineer to Baltimore's Department of Public Works, the U. S. Public Health Service, Tennessee Valley Authority, Association of American Railroads, U. S. Geological Survey, West Virginia Pulp & Paper Co. and the Interstate Commission on the Potomac River Basin. He is also at present active on ten different standing committees of various associations and governmental agencies, among them the American Water Works Association's Committee on National Water Policy, and is a member of no less than 25 professional societies.

• **Earlier activity**—He has been president of the American Water Works Association and the American Public Health Association, active in the American Society of Civil Engineers, American Public Works Association and the American Society of Planning Officials, and a consultant on water and sewerage problems to numerous states, cities and other governmental agencies. He has also lectured at the University of Chicago, Princeton and Harvard.

Professor Wolman has ranged far wider than sanitary engineering, having served such diverse activities as the Water Resources Committee of the National Resources Planning Board (chairman), War Production Board, Civil Works Administration, Expert Committee on Environmental Sanitation of World Health Organization (chairman), War Manpower Commission and the International Conference on Peaceful Uses of Atomic Energy.

He has also given unstintingly of his



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time to his native state and city. He has been chairman of the Maryland State Planning Commission, the Water Resources Commission of Maryland and the state's Bridge Supervisory Committee, vice-chairman of the Maryland Commission on Post-War Reconstruction and Development, and on advisory boards to the Maryland Bureau of Control Surveys & Maps, the State Employment Service and the State Roads Program & Policy Commission. For the city of Baltimore, he headed up a recent Mass Transportation Committee, has been a member of the Committee on Post-War Planning, Commission on the City Plan and a businessmens' watchdog Commission on Efficiency & Economy.

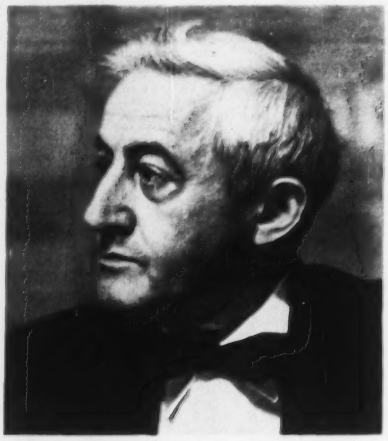
Although many of these outside activities have carried remuneration, his bread-and-butter jobs have been with the Maryland State Department of Health from 1914 to 1939 where he rose to chief engineer, as state director (for Maryland and Delaware) of the Federal Emergency Administration of Public Works from 1933 to 1937, and as professor of sanitary engineering, later head of the Sanitary Engineering and Public Health Departments, at Johns Hopkins University, starting in 1937.

Early this year, Professor Wolman relinquished his administrative post as chairman of the Department of Sanitary Engineering and Water Resources at Johns Hopkins. After June he will cut down on his teaching activities and has agreed to head a special committee to study the educational objectives of the School of Hygiene and Public Health. It is expected he will devote a very considerable portion of his time to the latter task.

• **Gifted tongue**—Abel Wolman possesses two remarkable talents. Many say he exercises the finest analytical processes to which they've ever been exposed. This is coupled with an extraordinary gift of expression, both orally and on the printed page.

His oratorical wizardry is legendary among sanitary engineers. To wit: A few years back before the Kansas state legislature, Spellbinder Wolman presented such a clear, dramatic portrayal of flood problems on the Kansas River that at its conclusion the usually matter-of-fact Kansas politicians rendered him a spontaneous ovation.

Perhaps the outstanding characteristic of his mental prowess is an ability to cast irrelevancies quickly aside and get to the heart of a complex problem. Should the problem be controversial, he has no compunction about taking a forthright stand.



ABEL WOLMAN: His words often key-note ultimate conclusions.

• **Water for all**—Currently, Evangelist Wolman's main ideological concerns are for communities to provide what he terms reasonable water service and for sanitary engineers to awaken to the implications of radioactive waste disposal. He has been drumming home the radical concept (to some waterworks men) that the public is entitled to all the water it wants and will pay for short of truly wasteful uses. In his words, "The situation will not be met by bemoaning privately the extraordinary habits of the American people and by resisting to the last ditch their insistence to be permitted to use water for purposes which they prefer."

To finance adequate water systems he has been preaching acceptance by water utilities of the ad valorem tax (for central system capital cost) and the front foot assessment (for capital cost of system serving individual customers) to complement the water consumption payment which is now generally the sole financial base.

As early as 1940, after studying census figures which showed a halt in the rapid growth of cities and coincident increase in rate of growth of suburbs, Abel Wolman was among the first to urge sanitary engineers to plan their facilities accordingly and to look with a new understanding toward metropolitan districts and other intergovernmental relationships. (One of the few times he has missed the bullseye occurred during World War II when, because of the uncertain post-war economic situation, he and many others called for "ten-year" thinking. Consequently, some of his own planning for Maryland and Baltimore fell short of meeting postwar boom needs.)

• **"Hot" garbage**—Professor Wolman was the first to urge state and local

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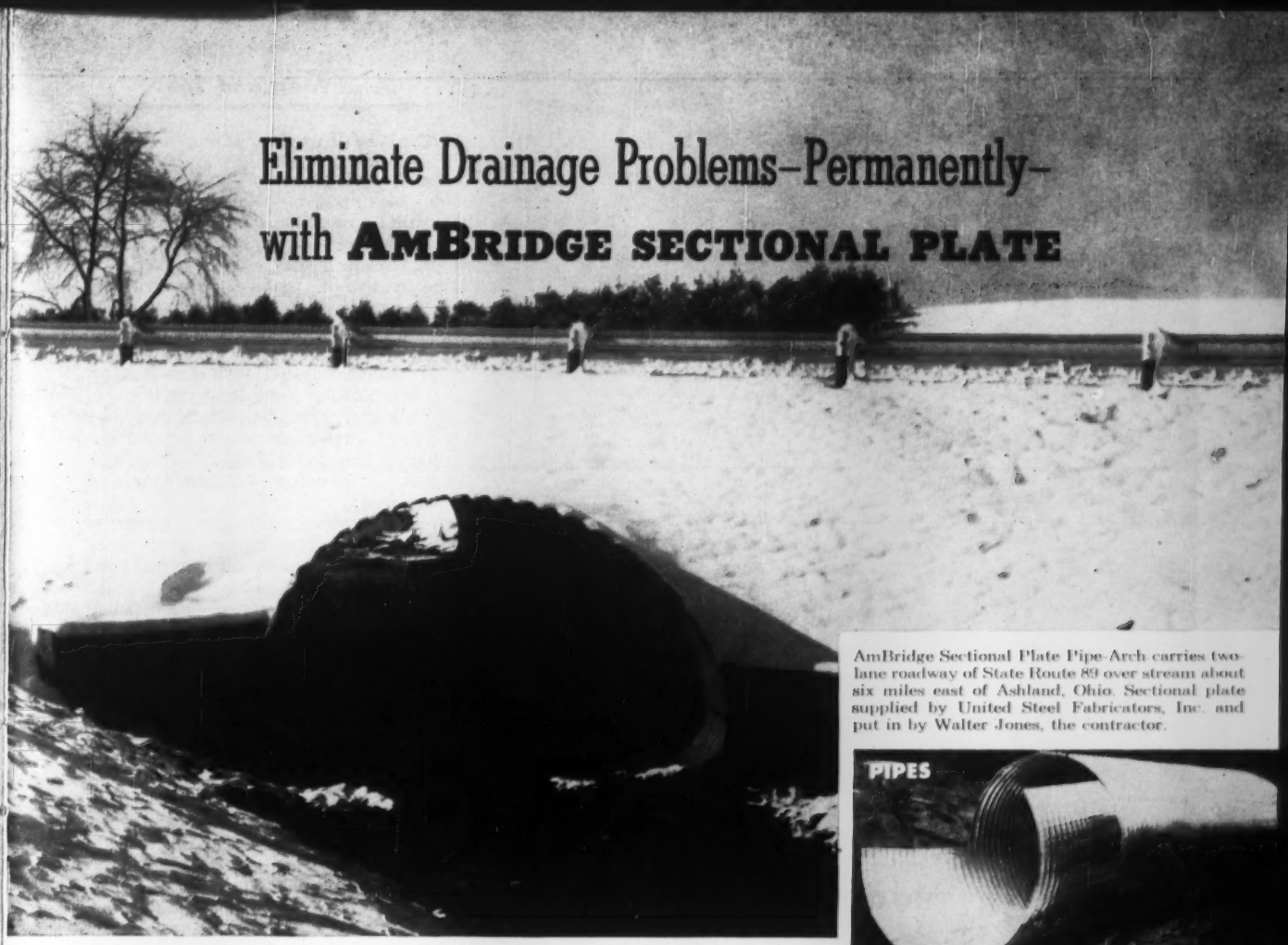

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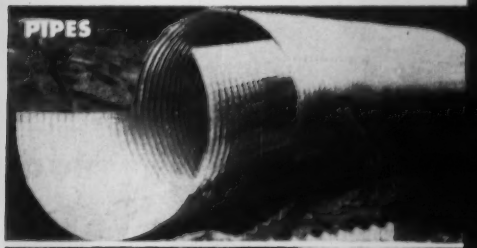

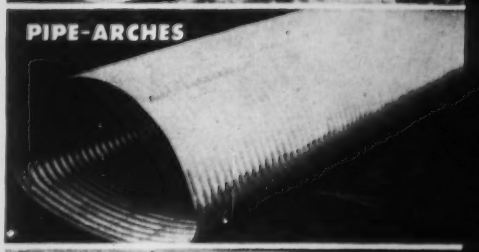

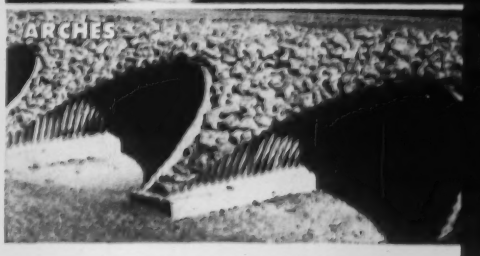

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Abel Wolman . . .

health and pollution control agencies to take up the challenge of environmental radioactive hazards before they found themselves replaced by other agencies in atomic control work. Subsequently he found it necessary to criticize sanitary engineers' "ostrich-like attitude" toward nuclear engineering. Even today, joined by many others, he is not satisfied with the level of activity of environmental agencies in this regard. His early and continuing activity in nuclear waste disposal has placed him at the helm of the profession in this new and important area of endeavor.

There were many other causes of broad interest over the years which Crusader Wolman has led, among them Engineers Joint Council's and AWWA's proposals of a national water policy. All in all he has greatly influenced significant governmental policies at all levels.

While quite comfortable in his role as statesman and philosopher on the public platform, Abel Wolman seems to relish more the problems and people he deals with on specific projects. This, and his feeling that life would be quite dull if it were laid out years ahead, accounts for his perambulating over the globe on various missions.

Bethlehem Steel Company's use of Baltimore's sewage effluent for cooling water in its Sparrows Point mill, the Water Resources Committee of the National Resources Committee (1936) and Israel's master irrigation plan are eloquent testimonies to his prowess as conceiver, planner and reviewer, respectively. But while these and other consulting efforts are notable, the man's more lasting impact will be the influence his thinking and methods of analysis have had on those with whom he has worked.

• **Teacher, too**—Wolman the preacher and consultant have overshadowed Wolman the teacher. But at Johns Hopkins he has been one of the leaders—bridging the gap between classroom and practice, and in an unusual manner. His students have been given high level, thought provoking problems concerning the surrounding communities—much the same type with which Wolman the consultant concerns himself. In applying themselves to these problems, his students have had a chance to derive a type of practical understanding that some engineers never achieve.

Personally, Abel Wolman is widely esteemed, a natural outgrowth of his enthusiastic personality. He wears his mantle with appropriate humility, but

can become righteously indignant, even mockingly sarcastic. Most of the time his knife-edged mind is sheathed in tolerance, good humor and the easy casualness that comes of self-assurance.

One of the best measures of the man is contained in the citation accompanying the Sedgwick Memorial Award from the American Public Health Association presented to him in 1948. It reads in part as follows:

"His career illustrates the kind of public service which Professor Sedgwick held in the highest esteem. Wolman's influence on students was like Sedgwick's. There was a similar overflowing of teaching into the practical aspects of community life, a generous and wise giving of himself to causes larger than himself and of which he became a part. The clarity of his thought has been notable. His wisdom and statesmanship are of rare quality and, in conference, his word generally flects the sureness of his position."

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Careers

Business

Harry W. Powell is appointed an assistant vice president in charge of purchasing for the construction department of Merritt-Chapman & Scott Corp., New York.

William L. Abramowitz has been elected president of The Carlon Products Corporation of Cleveland, Ohio, manufacturer of plastic pipe and custom fabricated fittings. Formerly he was vice president of the Borden Company's Chemical Division.

Frank A. Gould has been elected a vice president and director of John W. Cowper Co., Inc., engineers contractors, Buffalo, N. Y.

Education

Linton E. Grinter, dean of the Graduate School of the University of Florida, is a visiting professor of engineering at the University of Hawaii for one year.

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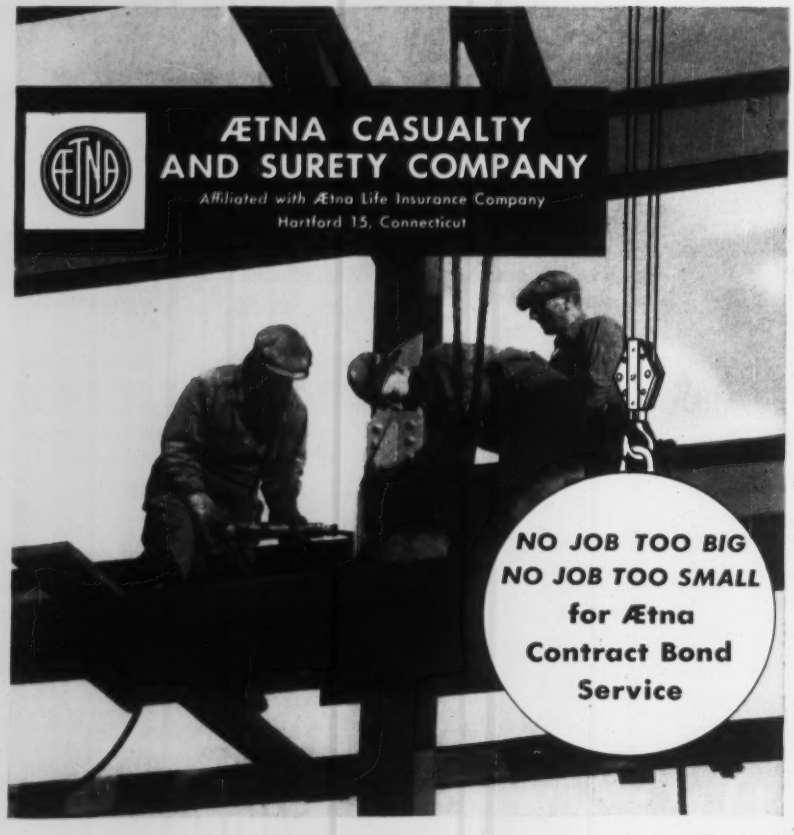

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Obituaries

J. Frazer Smith, 60, Memphis architect, died in Little Rock, Ark., April 13. Mr. Smith, a graduate of Georgia Institute of Technology, spent a year in Europe studying architecture before opening an office in Memphis in 1921. He was architect for Western State Hospital at Bolivar, Tenn., as well as other Tennessee hospitals, and in 1952 won the Modern Hospital of the Year award for the design of LeBonheur Children's Hospital in Memphis. He also was author of a book on antebellum architecture in the South.

Walter C. Rich, former district engineer for the New York State Department of Public Works in the Niagara Falls area, died April 17.

Harold J. Dawson, 63, president of Dawson Brothers Construction Co., Inc., died April 16. He received his civil engineering degree from Syracuse University.

Ben J. Small, 49, New York architect, died in New Rochelle April 13. Mr. Small was a partner in the New York architectural firm of LaPierre, Litchfield & Partners. Prior to joining the firm in 1945 he was head of specifications for the hospital division of the New York City Department of Public Works. He was associated with such projects as Thule Air Force Base in Greenland, the New York VA Hospital and the Bellevue School of Nursing. He, a graduate of the City College of New York and the Beaux Arts Institute of Design, was one of the founders of the Construction Specifications Institute.

Robert J. Hole, 63, vice president of the Cleveland Construction Co., died on April 20. He was a graduate of Massachusetts Institute of Technology.

Henry J. Comte, 80, partner for 60 years in the Comte Construction Co. of Toledo, Ohio, died April 11.

J. Balie Morlidge, 78, died last month in Cincinnati. He was senior member of Morlidge and Morlidge, an engineering firm there. A civil engineering graduate of the University of Cincinnati, he had been employed by the Army Engineers for survey work in Central America. From 1933 to 1948, Mr. Morlidge has been city manager of Newport, Ky., where had been instrumental in the construction of the Newport floodwall on the Ohio River.

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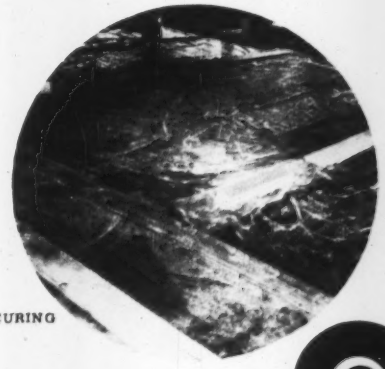

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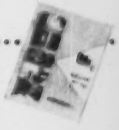

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3 STAGES

of every dirtmoving job where 9-yd. D Tournapull® pays off most...

Every dirtmoving project breaks down into sections, or phases. Experienced contractors plan each part individually... treating them almost as separate jobs.

Profit-wise, it makes a lot of difference *how* you handle various dirtmoving phases of the overall project. The *methods* you use are all-important. Using the wrong equipment on any stage of the operation eats into your total net profit on the contract. Here's how speedy 9-yd. D Tournapull gets your earth-moving done at lowest-net-cost-per-yard... on each of the 3 major stages of every project.

STAGE I: before

Prior to full-scale dirtmoving, it pays to "clear the decks for action" for your big-capacity earthmoving equipment. Using big scrapers for piddling pioneering cuts . . . or for rough-grading temporary haul-roads . . . can be expensive business. When you figure your net cost on the small amount of preliminary yardage moved — based on equipment investment and hourly operating costs of pushers and larger scrapers — it's plain you're getting off to a bad start, profit-wise.

"D's" set stage for higher fleet production

That's where your "hit-and-run" 9-yd. D 'Pulls shine. These 29.5 mph "Handyman" scrapers zip around your project . . . cutting here, leveling there . . . getting all the rough spots smoothed out for efficient operation by your big dirtmovers. These "D's" prepare rough cuts or borrows for easy production-scraper loading. They carve out shorter haul routes . . . chop down grades for faster hauls . . . get everything in readiness for quick cycles.

In dozens of money-making ways, these versatile "D's" will set the stage for higher production by your entire equipment fleet.

Plan your project for profit

So plan your project for profit. Arrange operations so your production earthmovers can achieve maximum hourly output. You'll see that just a few hours of advance preparation by these low-cost dirtmovers during Stage I, is your best assurance of higher output by every machine on your spread in Stage II!

Versatile 9-yd. D Tournapulls self-load efficiently in many materials . . . or can push-load each other for higher production.

Push-loaded, utility-size "D" heaps king-size payload fast . . . moves a lot of dirt at low-net-cost-per-yard.

"D" easily maneuvers in restricted areas where larger earthmovers can't operate efficiently. Here "Handyman D" swings around on narrow roadway, making continuous U-turn in 24'3".

Preparing site for big-capacity production earthmovers, "D" smooths and grades haul-roads . . . sets up cut, fill areas for easy operation of larger units.

Turn page for story on STAGE II

How D Tournapull® pays off on all 3 stages of production (continued)

138 hp "D's" rugged construction and no-slip differential assures smooth, fast haul over any type terrain. With 5 speeds forward, to 29.5 mph, unit completes more cycles per hour than any comparable scraper.

9-yd. D 'Pull holds its own in your production fleet . . . handles sizeable yardages fast, working efficiently with your larger scrapers. Here "D" boils up profitable payload of clay and topsoil.

STAGE II: during

As production dirtmoving gets rolling on your project, your fast 9-yd. D Tournapull holds its own with the best of them. It can either take over and complete a small separate section of the project . . . or it can work right along with your larger scrapers on big production jobs. Either way — "D" chalks up an impressive volume of dirt moved per hour, at rock-bottom cost.

Because of its speed and maneuverability, the "D" positions fast in the cut . . . jockeys easily between other machines, buildings, or other obstructions along the haul-road . . . swings around in tight U-turns for shorter, faster haul-and-return cycles.

Self-loads . . . or works with pusher fleet for highest yardages

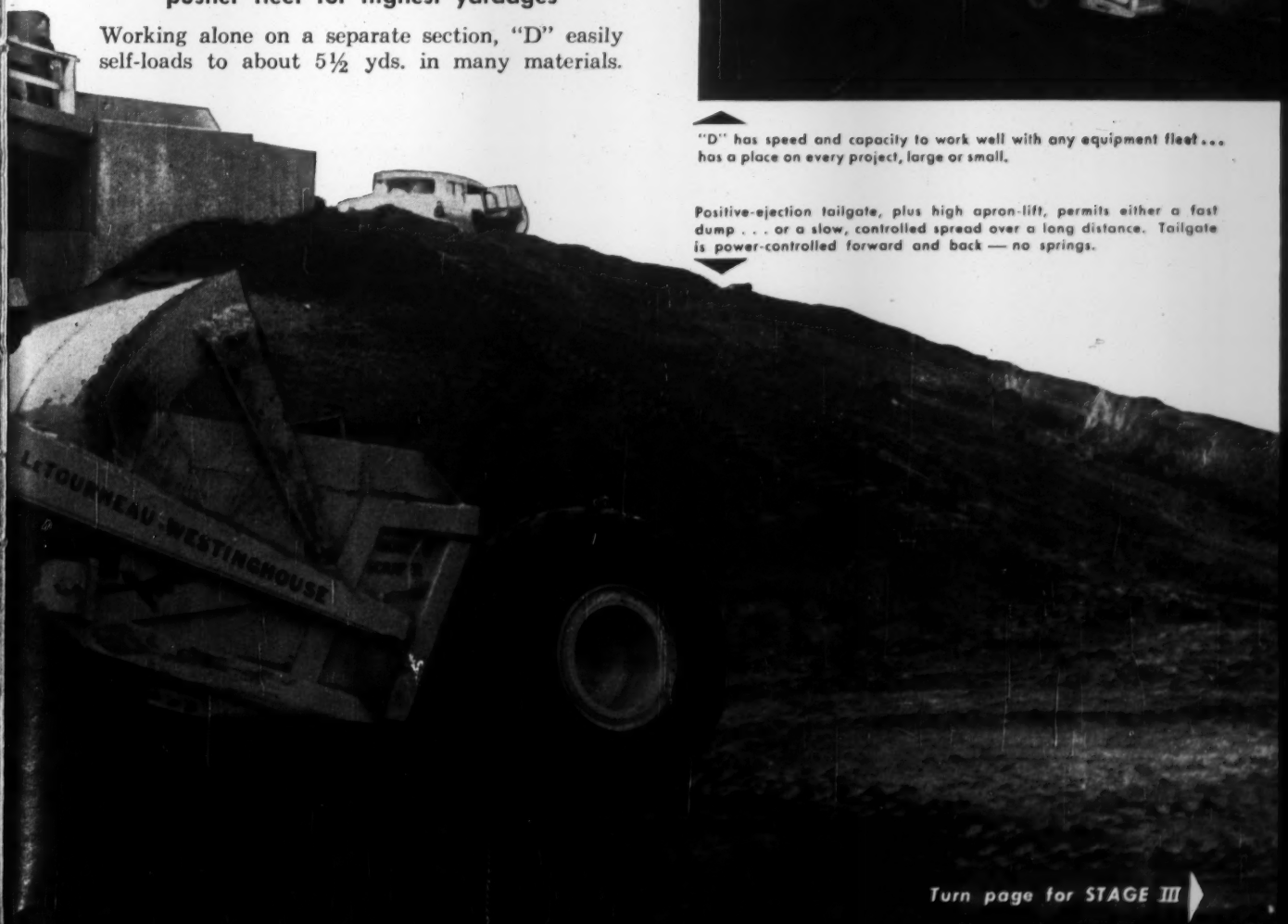
Working alone on a separate section, "D" easily self-loads to about 5½ yds. in many materials.

Dozer-blade equipped, "D's" can push-load each other to higher payloads. For production operations, on any length haul, pushers help assure maximum scraper output.

Push-loaded, 9-yd. "D's" get heaped loads fast. Units haul at high speed . . . often in 4th gear, at 20 mph. Spreads may be made on the run, in 15 seconds or less.

However you use fast-moving "D's" on your production fleet, they'll pay dividends for you, *fast.*

"D" has speed and capacity to work well with any equipment fleet . . . has a place on every project, large or small.



Positive-ejection tailgate, plus high apron-lift, permits either a fast dump . . . or a slow, controlled spread over a long distance. Tailgate is power-controlled forward and back — no springs.

Turn page for STAGE III

How D Tournapull® pays off on all 3 stages of production (continued)

9-yd. "D" is ideal for shouldering and backfilling around newly-poured concrete. Pull spreads accurately — in smooth, controlled lifts — right up to edge of slab. Because "D" meets 9-ton axle limit, unit can often return along newly-seasoned slab to speed cycle time.

Backfilling around culverts, bridges . . . constructing overpasses and access roads . . . replacing stockpiled topsoil or shouldering . . . these and dozens of other small-yardage finish jobs can be handled most economically with the "D".

STAGE III: after

When the dust settles after your production dirtmoving, and you are down to clean-up work, there are always a few scattered odds and ends of leftover dirtmoving to be done.

Here, again, is where careful planning and jobmanagement pays off. Here's where the *dirtmoving method used* may well be the deciding factor in your final profit figure on the entire contract!

Match dirtmover to job

General rule is to match the dirtmover to the size and nature of the work. If only "odds and ends" clean-up work remains, it stands to reason that your heavy earthmovers will be at a disadvantage. What you need is mobility, speed, maneuverability.

The scattered, small-yardage nature of the remaining work gives you your clue. Use a small, fastmoving scraper — one that can cover a lot of territory, and move a lot of selectively-cut dirt at low hourly cost. It's "made to order" for D 'Pull!

Seeing is believing

But . . . seeing is believing. When can we show *you* — on your own job? All it'll cost you is the price of a 'phone call. Let's set it up, right now!

After your production fleet moves on to its next project, "Handyman D" takes over . . . winding up remaining clean-up tasks at lowest-net-cost. Here "D" self-loads in topsoil and clay.

"D's" fast, controlled spreading action makes it ideal for laying topsoil, or bringing access roads and overpass approaches to specified grades. Simple electric controls operate bowl, apron, and tailgate.

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Contractor Recovers for Mistake

A contractor who made a mistake in his bid has been allowed by a federal court in Michigan to recover for an item of work he inadvertently omitted to include in preparing his bid. As the case points out, however, the omission was such as to put the other party on notice that an error existed. This is what happened:

A contractor submitted a bid for the manufacture of certain ordnance equipment consisting of two items composing an assembly. One of the items was a bushing, which is a cylindrical object approximately 3½ inches long and 4 inches in diameter, weighing approximately 5 pounds. The other item was a lifter body, which is a heavy steel casting 22½ inches long, weighing approximately 28½ pounds. The contractor in computing its bid inadvertently overlooked the larger of the two items and submitted a bid for the assembly which was based on the cost of producing the small bushing. The contractor did not discover the mistake until the bushings were completed and ready for delivery. At that time a government inspector called the omission to its attention.

After the mistake had been called to the attention of the contractor, it had several conferences with the officials of the government that had asked for the bids and the contractor was given the alternative of completing the contract and applying for administrative relief or being held liable for breach of the contract.

The contractor elected to fulfill the contract, however, and upon being denied administrative relief, brought the action against the government to be paid for the cost of producing the item that it had omitted from its bid and obtained a recovery.[1] The recovery was granted on the basis that the difference between the bid of the contractor and the next lowest bidder was so large that the officials of the government could be charged with knowledge that the contractor had made a material error in its bid.

There were 10 bidders for the product. The low bidder bid $3.91 per unit for 750 units or a total bid of $2,932.50. The next bidder was $6.40 per unit or a total of $4,800 for all the products. The other 10 bidders prices varied from $18 to $300 per unit. The high price of $300 per unit was that of the tenth bidder, while the ninth bidder's price was $39.50 per unit.

The court stated: "The only excuse offered by the plaintiff (contractor) for its carelessness in computing its bid was that, at the time the invitation to bid was received through the mail, drawings of the bushing were enclosed but the drawings for the lifter body were not included. The plaintiff relies, however, on the variances between the submitted bids to place the Government on notice of plaintiff's unilateral mistake, contending that because of the great discrepancy between the two low bids and those of other bidders, the Government had reason to know that both the plaintiff and the second lowest bidder had made a substantial mistake in computing their bids and that it would be inequitable and unjust to hold plaintiff to his contract.

"It is well settled that if a material unilateral mistake is known to the other party or because of accompanying circumstances the other party had reason to know of it, the party making the mistake has a right to rescission. Moffett, Hodgkins & Clark Co. v. City of Rochester, 178 U.S. 373, 20 S. Ct. 957, 44 L. Ed. 1108; Armour & Co. v. Renaker, 6 Cir., 202 F. 901; United States v. Jones, 9 Cir., 176 F. 2d 278; Saligman v. United States, D.C., 56 F. Supp. 505; State of Connecticut v. F. H. McGraw & Co., D.C., 41 F. Supp. 369; Kemp v. United States, D.C., 38 F. Supp. 568.

"It is to be noted that all but the two lowest bids were for $18 or more, excluding the highest bid of $300, which under the proof in this case was clearly out of line. The average of the next seven bids above the two lowest bids is $24.96. This is six times the amount of plaintiff's bid of $3.91 and approximately four times the second bid of $6.40. Clearly under the evidence in this case plaintiff's bid and the next lowest bid were the result of a mistake by the bidders in omitting the larger item of the assembly in computing their bids. Both of the bids were less than the cost of the raw material required to produce them. As the contracting officer who awarded the contract testified, if he had seen the two items of equipment which were exhibits at the trial, or if he had looked at the drawings of them, he would have been put on notice that something was wrong."

"It is well known," the court said, "that the vast operations of the Government require the awarding of a tremendous number of contracts on competitive bids, and as stated in Saligman v. United States, D.C., 56 F. Supp. 505, the Government should not be obliged to act as a nursemaid for careless bidders. It is true that in this case the plaintiff made an honest but careless mistake. The defendant did not have actual knowledge of the error and no inference of bad faith exists on the part of the Government in awarding the contract. However, there is justice in plaintiff's complaint that to hold it to the severe consequences of its unilateral mistake would be harsh and inequitable. It is not believed that an honest, fair-minded and reasonable man in good conscience would seek to maintain such a gross and inequitable advantage of a mistaken bidder when as in this case he has reason to know of the mistake, and the government is required to maintain this same standard of fairness with those who contract with it. Kemp v. United States, D.C., 38 F. Supp. 568,570. Under all the circumstances it must be held that the government should have known at the time it awarded the contract that a gross mistake had been made by the plaintiff and therefore it is inequitable to hold the plaintiff to the terms of the contract.

"The question arises as to the nature of relief to be afforded. See Restatement of Law of Restitution, Sections 59,107,142. Obviously the Government would have accepted the third lowest bid of $18 if the two erroneous bids had not been submitted, and the record shows that $18 is a fair and reasonable price for the production of the assembly. The Government therefore would not be prejudiced in giving the relief the plaintiff is seeking other than its loss of a bargain that was brought about through a gross and obvious mistake."

(1) C. N. Monroe Manufacturing Company v. United States, 143 F. Supp. 449, United States District Court, Michigan, July 27, 1956.

One Can't Sue for Delay If Prevented Performance

If delayed performance stems from actions of the owner rather than the contractor, the law generally protects the interests of the contractor and prevents the owner from suing for damages. The law's approach to the problem is discussed in the cases below.

"A party to a contract cannot take advantage of his own act or omission to escape liability thereon. 17 C.J.S., Contracts, section 468, page 966; 12 Am.

jur., section 381, page 957. Where a party to a contract prevents the fulfillment of a condition precedent or its performance by the adverse party, he cannot rely on such condition to defeat his liability. Overton v. Vita-Food Corp., 94 Cal. App. 2d 367, 371, 210 P. 2d 757, 759.'"

"In every contract there exists an implied covenant of good faith and fair dealing, that neither party shall do anything which will have the effect of destroying or injuring the right of the other party to receive the fruits of the contract."[2]

"He who prevents a thing from being done may not avail himself of the non-performance which he has, himself, ocasioned, for the law says to him, in effect; 'This is your own act, and, therefore, you are not damnified.' * * * The principle is fundamental and unquestioned. * * * Sometimes the resulting disability has been characterized as an estoppel, sometimes as a waiver * * *. We need not go into the accuracy of the description. The truth is that we are facing a principle more nearly ultimate than either waiver or estoppel, one with roots in the yet larger principle that no one shall be permitted to found any claim upon his own inequity to take advantage of his own wrong.'"[3]

(1) Sloan v. Stearns, 290 P. 2d 382.

(2) Halstead et al. v. General Ry. Signal Co., 51 N.Y.S. 2d 372, affirmed 52 N.Y.S. 2d 660.

(3) Imperator Realty Co. v. Tull, 228 N.Y. 447, and many cases there cited.

Contractor Not Allowed Advantage of Mistake

The right of a subcontractor to rescind a contract because it contains a mistake known to the prime contractor but not to the subcontractor is discussed by a California court in a case where the contract called for work on which the sub had not bid.

In that case the prime contractor was not allowed to enforce the contract because he would be unjustly enriched.

The prime contract was for construction of a school. The subcontractor had submitted a bid for part of the steel work. Rest of the steel work was to be handled by another subcontractor.

When the prime contractor submitted his bid, he listed the two subcontractors for the performance of the steel work. The prime contractor submitted to the first subcontractor a contract which he executed. Later, he discovered that the prime contractor had included in the contract the part of the work that was to be done by the other subcontractor and he returned the signed contract to the prime contractor and asked that it be corrected so that it conform to the bid and the intention of the parties. The prime contractor refused to change the contract whereupon the subcontractor notified the prime contractor that it would not perform the contract as executed.

The prime contractor then entered into a contract with another subcontractor to perform the steel work which subcontract included the part of the work that was not included in the bid submitted by the original subcontractor. This contract price was $11,300 more than the amount of the bid submitted by the first subcontractor and the prime contractor brought an action to recover this amount as damages for breach of contract. The action was dismissed by the trial court on the ground that the prime contractor, in submitting his bid, had listed another contractor as the party who was to perform a particular part of the steel work and that this in itself indicated clearly that this part of the work was not included in the work that was to be performed by the first subcontractor.

The judgment of the trial court was affirmed on appeal,[1] the appellate court stating: "It follows that the court was clearly correct in its implied conclusion that plaintiff (prime contractor) would not enforce the contract as made when the contract is still executory, and the parties can be put in status quo. One party to the contract will not be permitted to obtain an unconscionable advantage through enforcement of the contract where he knows of the other's mistake, where such mistake is material and not the result of neglect of a legal duty or an error in judgment, and the requirements for rescission are fulfilled. M. F. Kemper etc. Co. v. City of Los Angeles, 37 Cal. 2d 696, 701, 235 P. 2d 7. That a mistake of which plaintiff was aware, and through which defendant (subcontractor) seemingly agreed to perform a contract for a price of $37,000 calling for work reasonably worth $47,000 was of so essential and fundamental a character that the minds of the parties never met on the contract as executed, would scarcely seem to require discussion. And where, as here, one of the parties, through excusable mistake or neglect and not because of an error of judgment, has named a consideration that is out of all proportion to the value of the subject of negotiations, and the other party, cognizant of such mistake, takes inequitable advantage of it, the latter cannot under such conditions claim an enforceable contract."

(1) Brunzell Const. Co. v. G. J. Weisbrod, Inc., 285 P. 2d 989, District Court of Appeals of Cal., July 7, 1955, and numerous cases there cited.

Materialman's Rights Superior to Tax Lien

The interest of a materialman in a retained percentage of the contract price is superior to a government tax lien against one of the subcontractors—at least in Texas.

In reaching that conclusion, a federal court in Texas had before it a case that arose under these circumstances:

Calhoun Development Co., a wholly owned subsidiary of Aluminum Co. of America, contracted, as owner, for construction of a housing subdivision at Rockdale, Texas. Karl B. Wagner Engineering, Inc., was the general contractor; J. R. Canion was the first-tier subcontractor under Wagner; W. S. Conner was a subcontractor under Canion to construct curbs and gutters; and B. W. C. Construction Co. was a subcontractor under Conner to construct the curbs and gutters.

Transmix Concrete of Rockdale furnished ready-mixed concrete as ordered by B. W. C. Construction Co. The total value of the concrete so furnished amounted to $11,496.45. The concrete was furnished on an open account, and the total payments made by Conner to Transmix in accordance with instructions and the consent of B. W. C., amounted to $6,252.40, leaving a balance of $5,246.05 owing to Transmix which had not been paid. Before Transmix had furnished all the concrete needed for the job, B. W. C., Conner and Canion agreed that Transmix would be paid for the concrete out of any money due Conner, Canion or B. W. C. Construction Co.

Before the balance owing Transmix had been paid, the government asserted a tax lien against B. W. C. on the balance due it for the performance of the contract, whereupon payment to Transmix was withheld. Transmix brought an action to recover the balance due it and obtained a recovery,[1] the court holding that under the agreement between the parties, the retained percentage was to be used to pay Transmix for the concrete delivered to and used in the performance of the work and that under Texas law, the materialman had a priority over the government.

(1) Transmix Concrete of Rockdale v. United States, 142 F. Supp. 306, U.S. District Court of Texas, Feb. 15, 1956.

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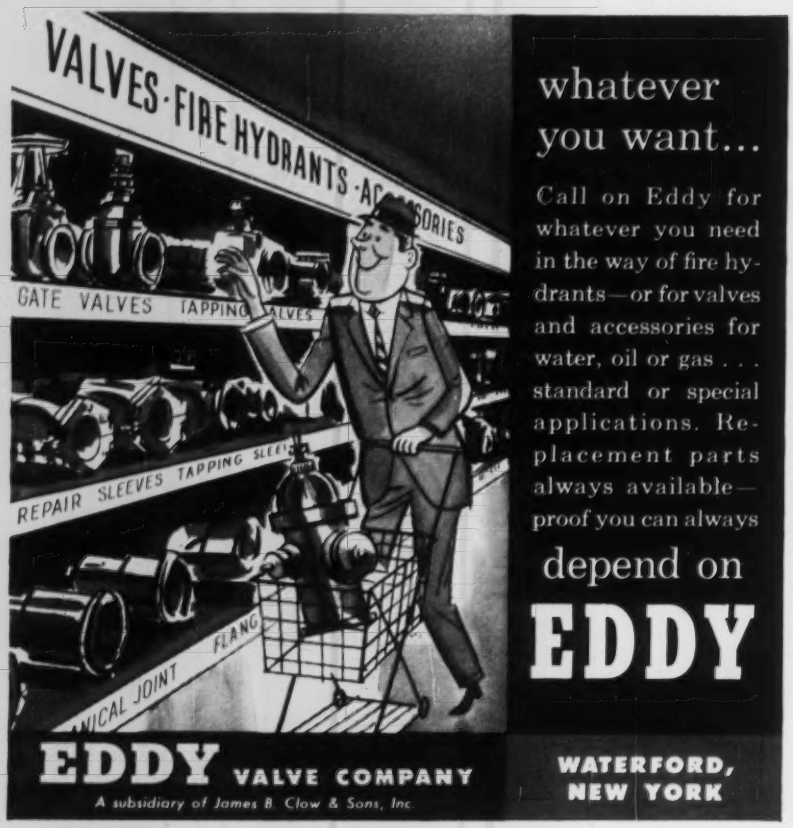

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Books

Landslide Classic

LANDSLIDES IN CLAYS—by Alexandre Collin, 1846. Translated from the original French by W. R. Schriever, with foreword by R. F. Legget and a memoir on the author by A. W. Skempton. 160 pp. Published by the University of Toronto Press, Toronto, Ontario. $6.50

A book that appears destined to become a classic in civil engineering in the English-speaking world, and especially in the field of soil mechanics, was published recently by the University of Toronto Press. It is entitled "Landslides in Clays" and is a translation of "Glissements, Spontanes des Terrains Argileux" by Alexandre Collin, which was published in French more than a century ago, in 1846.

Collin was a French engineer, a graduate of the Ecole Polytechnique in Paris, who early in his career ran into trouble with landslides while serving as an engineer on the Canal de Bourgogne for the Corps Royal de Ponts et Chaussees. That experience spurred him into the study of slides in clays, which is the subject of his book. No such research program in what now is known as soil mechanics was to be undertaken again until Karl Terzaghi began his now famous studies early in the current century.

The great value of this translation of Collin's book is the perspective it supplies. Heretofore, the civil engineering world, generally, has believed that the serious study of soil mechanics began with the research work of Terzaghi. The Collin book is outstanding evidence that scientific analysis of mass soil movements began more than a century ago. And even before Collin, as Prof. Skempton notes in his discussion of Collin's pioneering work, there had been some scientific study of the mechanics of soils by such engineers as C. A. Coulomb and J. F. Francais.

Collin appears to have been the first to observe that the fundamental movement of a slip in clay soils appears to be rotation along an approximately cycloidal arc. From this he concluded that the cause of a slip clearly was inadequate shear strength in the clay.

That conclusion led him to undertake to measure the shear strength of clay soils with varying water content. The shear box that he developed for that purpose is described in his book. It produced results that demonstrated for him the important influence of water content.

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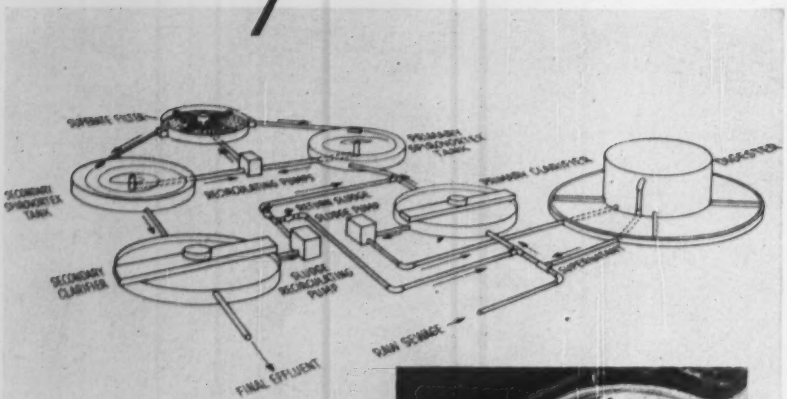

THE SPIROVORTEX SYSTEM
Incorporating The Superate Filter

A radically new and different approach to the treatment of domestic sewage and industrial wastes, the Dorr-Oliver SpiroVortex System contains many definite and proven advantages. It is especially suited where 90% B.O.D. removals are required. The headaches caused by bulking of sludge are eliminated as this new System produces an excellent settling sludge, regardless of whether the plant is overloaded or is operating under normal conditions. The high recirculation ratio over the Superate Filter means greater ability to handle changes in raw sewage characteristics under shock load conditions.

For a more complete picture of how the new Dorr-Oliver SpiroVortex System operates, write for a copy of Bulletin No. 7314 — just off the press. Dorr-Oliver Incorporated, Stamford, Connecticut.

SpiroVortex System and Superate Filter are trademarks of Dorr-Oliver Incorporated

DORR-OLIVER
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

GUNITE
Since 1915
CONCRETE
SAND AND CEMENT
Placed by Air
We have the equipment, personnel and experience to complete any and all GUNITE work regardless of size or location.
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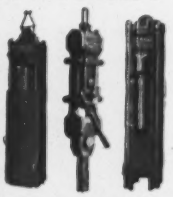
Milwaukee and Twin Cities Denver New Orleans

McKIERNAN-TERRY
WIDE-RANGE LINE OF
PILE HAMMERS
AND
EXTRACTORS



Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Also Sand Drain Equipment and Steam Generators.
Write for free descriptive Bulletins.
Also builders of coal and ore bridges and unloaders, and specially designed machinery.
McKIERNAN-TERRY CORP.
32 Mercer Street, Dover, N. J.

could not be achieved with the slopes generally used in cuttings through clay strata. Consequently, as it was obvious to him that the use of slopes flat enough to be stable was impracticable, he pointed out that the aim of engineers should be to delay the rate of softening by the use of drainage, diversion ditches and vegetation. Collin's reasoning stands unchallenged today.

An interesting detail of this book is the account, written by R. F. Legget, of how he came to discover that a French engineer had written a test on "mechanique terrestre" back in 1846, of his difficulties in obtaining a copy, and finally, of the problems faced by the three men who participated in the translation—R. F. Legget, J. P. Carriere and W. R. Schriever.

Books & Pamphlets

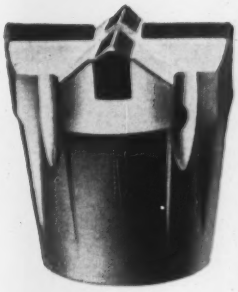
• **Freeze-thaw durability of aggregate**—Bulletin 143, issued by the Highway Research Board, describes the testing procedures, field observations and laboratory freeze-thaw results of the Michigan Highway Department in determining the acceptability of aggregates for use in highway concrete. It also describes the effect of heavy media separation on durability of concrete made with Indiana gravels. Cost, 60 cents. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

• **Capillary control in ground-slab construction**—A circular gives recommendations for elimination of humidity resulting from capillary action in concrete slabs placed directly on earth fill. Details of studies on various capillary break material—including crushed stone, sand, vapor barriers and quality concrete—are included. "Capillary Break Materials for Slab-on-Ground Construction", Kansas State College, Engineering Experiment Station, Manhattan, Kan.

NOTES ON STRUCTURAL PLANNING & DESIGN AND SUPPLEMENTARY NOTES ON STRUCTURAL PLANNING AND DESIGN—by James N. DeSerio. First book $5.00; second book $3.50. Combination price for both $8.00. James N. DeSerio, 505-511 Root Building, Buffalo 2, N. Y.

ALUMINUM IN MODERN ARCHITECTURE—VOLUME I—by John Peter. $10.30. VOLUME II—by Paul Weidlinger. $17.50. Price for two volumes $25.00. Reinhold Publishing Co., 430 Park Ave., New York.

SYMPOSIUM ON SPEED OF TESTING OF NON-METALLIC MATERIALS—ASTM Special Technical Publication 185. 86 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $2.50.

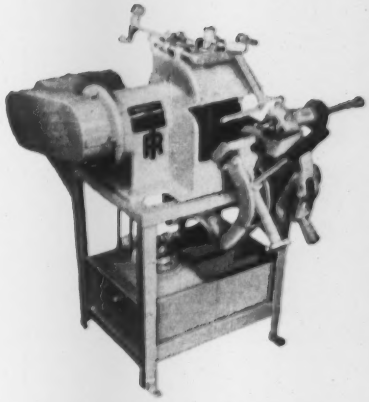
CARSET  JACKBITS

are PRECISION MADE

for HIGHEST PERFORMANCE

Maintain That Performance
by resharpening with
the NEW JC-3 JACKBIT GRINDER

- ▲ Grinds cutting faces to precisely correct profile for maximum drilling efficiency.
- ▲ Grinds bit gage to proper clearance.
- ▲ Eliminates waste of over-grinding.
- ▲ Greatly multiplies operator output.
- ▲ Available with electric, air or gasoline engine drive.



JC-3 Electric Drive Grinder

TO MAINTAIN the unequalled drilling speed of a NEW Ingersoll-Rand Carset Jackbit—and get maximum feet of hole from each bit — resharpening should be done to close tolerances and without unnecessary waste of the cutting material.

All of these requirements are met to excellent advantage with the new JC-3 Jackbit grinder — far more quickly, easily and accurately than by hand grinding methods. Ask your I-R representative for complete information on this time-saving, cost-saving machine. Or send for a copy of Bulletin 4187.

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

COMPRESSORS • TURBO-BLOWERS • ROCK DRILLS
AIR TOOLS • CENTRIFUGAL PUMPS • CONDENSERS
GAS AND DIESEL ENGINES

25 518

Getting more usable horsepower

LINK-BELT SPEEDER machines have precision-made, heavier components to take this bonus engine power

To get an accurate gauge of shovel-crane work potential, it's important to make your comparisons on the basis of usable horsepower rather than engine size. Why? Because size for size, a Link-Belt Speeder delivers *more usable power or line pull* than other machines powered by the same make and model engine. And greater usable horsepower is bonus power that pays off in easier digging, faster cycles, more production and profits.

The variation in the amount of power a given engine actually makes available in the form of line pull (or power at the drums) is determined primarily by the net horsepower the engine delivers at the output shaft. Engine Model X, for example, when run at 750 rpm, delivers *125 hp*. At 950 rpm the same engine develops *150 hp!*

What permits greater horsepower

Because the Link-Belt Speeder line is the industry's most advanced in design —17 new models—it incorporates the latest development in engineering, metallurgy and fabricating. As a result, every Link-Belt Speeder is an "extra strength" machine — a shovel-crane with the added guts and stamina to take full advantage of the bonus horsepower available in each engine . . . at operating speeds well within the engine manufacturers' recommendations.

Only part of the story . . .

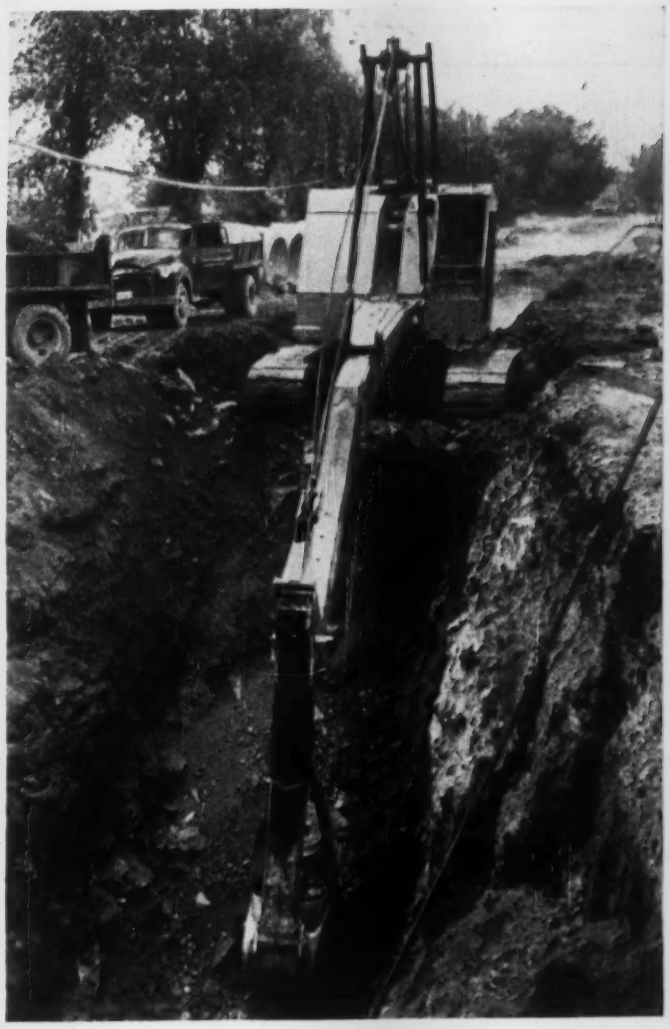
More usable horsepower is but one of many reasons why Link-Belt Speeder machines are completely revising existing profit and production standards. Why not see how you, too, can take advantage of Link-Belt Speeder "years ahead design" . . . earn a bigger return on your shovel-crane dollars. Contact your Link-Belt Speeder distributor for details or write Link-Belt Speeder Corp., Cedar Rapids, Iowa. 14,449

3-point check on usable horsepower

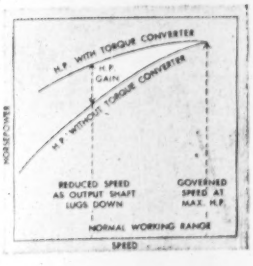
First check the engine manufacturer's "specs" to see what power the engine develops at various speeds. Then check the shovel-crane manufacturer's "specs" to see at what speed he'll actually set that engine. Third, check the shovel-crane itself. See if shafts, clutches, gears and other components have the size and strength to take full advantage of available engine power. Make these checks and you'll discover another sound reason why Link-Belt Speeders are engineered to earn a bigger return on your shovel-crane dollars.

Greater horsepower plus power hydraulic controls gives you speed with safety

With exclusive Speed-o-Matic power hydraulic controls, a Link-Belt Speeder uses oil under pressure to achieve perfect feel of the load under all conditions . . . to eliminate the customary jerk, jump or lag found with air or mechanical controls. Proper pressure is maintained by an engine-driven pump through variable pressure valves. Oil pressure goes directly to hydraulic-actuated clutches. Response is smooth, fast and accurate.



from shovel-crane engines.....



For even more effective use of power

The horsepower gain charted at left is yours with a Link-Belt Speeder equipped with a matched engine torque converter package. Available for all models, torque converters cut digging shock, reduce fuel consumption, match power to the load and reduce engine stalls.

Less chance for end-of-the-shift letdown

Because oil under pressure does all the work, the operator merely needs to flick short-throw levers. He stays fresh and alert, is actually encouraged to push the machine to its high limit all shift long.

It's time to compare . . . with

LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

ROCK CLIFF on left being removed to make room for four-lane highway.

Sante Fe Trail Widening, Big New Mexico Rock Job

To make the famed Santa Fe Trail into a 4-lane divided highway through a narrow canyon that it shares with the Atchinson, Topeka & Santa Fe Railway, the contractor for this job will have to blast and remove 620,000 cu yd of rock cliff without disrupting either train or vehicular traffic and with only minimum delays allowed. He must also work without damage to tracks and "utilities". The shortest alternate route or "detour" adds 100 miles of travel.

This contractor is Metropolitan Paving Co., Oklahoma City, Okla. He bid $1,866,829 for this 3.876 mile stretch of 4-lane bituminous pavement, or $92.22 per lin ft.

This is a limited access section of US 84-85 between Santa Fe and Las Vegas on New Mexico's interstate system. It is 15 miles south of Santa Fe. A large box culvert is adjacent to the cliff to be removed. A traffic interchange will go in next to this culvert.

Work is for the State Highway Department, L. D. Wilson, chief highway engineer. J. A. Fairly, Jr., is district engineer and C. D. Rickman is project engineer.

The low bid was 21% below the engineer's estimate and 7% below the second low bidder. Of the six bids only one topped the engineer's estimate.

The cliff that will be cut back 150 ft to widen the canyon is 175 ft at its highest point above the present highway.

The contractor has purchased a 4 cu yd shovel for this job, the largest ever used on road work in New Mexico, and three 27 cu yd tournarockers to work under the shovel.

Specifications require that class A concrete contain six bags of cement per cu yd and that 175 lb of fine aggregate, 300 lb of coarse aggregate and six gallons of water be used per bag of cement.

Wage rates scheduled for this project range from $1.65 for common labor and $2.55 for semi-skilled to $2.90 for skilled labor.

Bidders include:

1C Metropolitan Paving Co., Oklahoma City, Okla.	$1,866,829
2 Skousen-Hise Contr. Co. & Skousen Constr. Co., Albuquerque, N. M.	2,007,746
6 Wayne A. Lowdermilk, Inc., Espanola, N. M.	2,373,901
EE New Mexico State Highway Department	2,356,655

Bids: 1-25-57 Items	Unit	Quantity	Unit Prices 1C	2
Remove old structures	ls	job	$10,000	$15,000
obstructions	ls	job	600.00	500.00
Clear & grub	ls	job	20,000	17,000
Exc, unclassif	cy	1,252,856	0.70	0.75
for structures	cy	7,352	2.60	3.00
for pipe culverts	cy	4,190	2.60	3.00
Watering	Mgal	18,495	0.80	0.50
Rolling, tamping roller	hr	545	8.00	12.00
pneum tired	hr	1,320	5.00	4.50
steel tired	hr	950	7.00	6.50
50 t roller	hr	1,975	8.00	5.00
Tamping, mechanical	hr	1,344	5.00	6.00
Overhaul	stay	494,016	0.01	0.04
Haul, ¼ mile yd	ea	3,306,872	0.05	0.05
ton mile	ea	364,415	0.065	0.09
Riprap, derrick stone	cy	8,353	3.25	5.00
Exc for riprap	cy	4,155	0.80	2.00
Cattle gd, rdwy, 18'	ea	4	1,800	2,000
24'	ea	2	2,400	2,400
Gd fence, steel plate	lf	3,320	3.50	6.00
Fence, galv barbed wire	lf	44,750	0.23	0.38
Gate, std type	ea	11	30.00	50.00
Bracing	ea	137	10.00	10.00
Markers, ROW	ea	52	8.50	7.00
project, std Fed Aid	ea	1	50.00	100.00
Warn posts, treat timb, refl, 8"	ea	303	5.80	8.00
Gradation subbase, contr	t	86,555	0.90	0.53
Base course	t	37,435	1.40	0.83
Bit matl, type MC-1	bbl	1,820	6.20	7.50
type 120-150	bbl	490	6.20	8.00
Cover material	t	850	6.00	6.00
Surf crse, plant-mix	t	24,965	3.50	4.00
Bit matl, type 85-100, plant-mix	bbl	7,700	6.50	6.50
tack coat	bbl	745	6.20	7.00
Concrete, cl A	cy	3,712	60.00	60.00
Reinforcement, conc str	lb	447,397	0.12	0.175
Median curb & gutter, concrete	lf	7,076	1.00	2.00
Retards, grout rock	cy	149	5.00	20.00
Pipe, culv, 24"	lf	1,528	4.40	8.00
30"	lf	382	6.50	9.50
36"	lf	922	7.80	13.50
36", ES, 10-ga	lf	256	9.60	17.00
48"	lf	648	11.00	19.00
54"	lf	382	17.00	25.00
Steel, structural	lb	176	0.50	1.00

Time to complete: 350 working days
Liquidated damages: $100 per day

Channel Dredging, Iowa

Flood protection on the Upper Iowa River near New Albin, Allamakee County, Iowa, requires 6.6 miles of channel dredging to a bottom width of 150 ft at 1 on 3 side slopes. The St. Paul District of the Corps of Engineers let work in two contracts.

The $200,393 contract to La Crosse Dredging Corp., Chicago, Ill., is 21.5% below the second low of five bids and 19% below the engineer's estimate. Excavation on this 2.1 mile section calls for hydraulic cutter-head type dredges.

For $574,513, the other contract went to Mark Eischeid Contracting Co., Inc., New Hampton, Iowa, at a price 10.15% below the only other bid and 6.5% below the engineer's estimate. This 5.5 mile section requires large dragline type excavators.

Minimum wage rates are $2.75 for skilled labor, $2.25 for semi-skilled and $2.05 for common labor.

Bidders include:

Schedule I, 2.1 miles long

1C La Crosse Dredging Corp., Chicago, Ill	$200,393
2 Ferd J. Robers Co., Burlington, Wis	255,581
5 St. Paul Dredging Co., St. Paul, Minn	299,267
EE U. S. Engineers, St. Paul District	247,373

Bids: 1-17-57 Items	Unit	Quantity	Unit Prices 1C	2
Clearing	ls	job	$31,300	$45,000
Excavation, channel	cy	628,600	0.296	0.335

Time to complete: 550 calendar days
Liquidated damages: $50 per day

Schedule II, 5.5 miles long

1C Mark Eischeid Contracting Co., Inc, New Hampton, Iowa	$574,513
2 Eugene Luhr & Co., Columbia, Ill	639,275
EE U. S. Engineers, St. Paul District	614,130

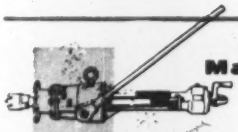
Bids: 1-17-57 Items	Unit	Quantity	Unit Prices 1C	2
Clearing	ls	job	$90,000	$45,000
Excavation, channel	cy	2,083,000	0.1798	0.215
Filter blanket	cy	4,340	6.00	6.50
Riprap	cy	9,080	7.50	9.00
Conc fill for riprap	cy	70	80.00	50.00
Abutment protect at RR bridge	ls	job	10,250	13,000

Time to complete: 580 calendar days
Liquidated damages: $100 per day

MUELLER PRODUCTS STANDARD OF THE WATER WORKS INDUSTRY

Since the first Mueller Tapping Machine revolutionized the method of making service connections to mains, Mueller products have been the water industry's basic equipment. Today, a large portion of the nation's water works companies use Mueller products — many exclusively. Their trust in the superior quality of Mueller products is repaid with long, trouble-free service.

Drilling Machines

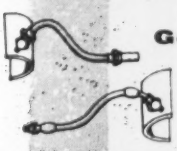


...cuts from ¾" to 12". Pressures to 500 p.s.i.

Corporation Stops

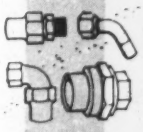
...½" to 2". Practically any combination of inlets and outlets.

Gooseknecks



...wiped joint, lead flange, solder joint.

Service Pipe and Fittings

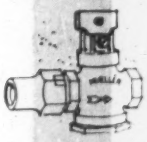


...tees, branches, couplings, fittings.

Service Clamps

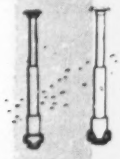
...single or double strap.

Curb Stops



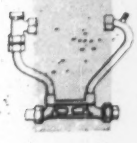
...inverted key or solid head. ½" through 2".

Curb Boxes



...telescopic type.

Meter Setting Equipment



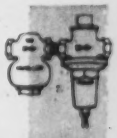
...yokes, relocaters, stops, meter box covers.

Miscellaneous Valves...check, flap, mud valves...shear gates... valve operating mechanisms ...indicator posts, floor stands, extension stems.

Tapping Machines

...for inserting corporation stops ½" through 2" ...plugs ½" through 4".

Regulators, Strainers, Relief Valves



...for water, steam, gas or oil.

Tools

...jointers, calking tools.

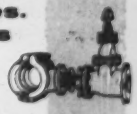
Fire Hydrants

...AWWA improved. Flush type.

Gate Valves

...2" to 48". Four-point wedging mechanism.

Tapping Sleeves, Crosses, Valves. Repair Sleeves



...to 48". Calked or mechanical joint types.

Inserting Valves – Equipment

...for 4", 6", 8" lines. Pressures to 125 p.s.i.

Valve Boxes

...for valves to 24".

Rough Plumbing

...stops, drains, faucets.

HOW 8,000 lbs. was safely hoisted 75 feet in THREE minutes flat!

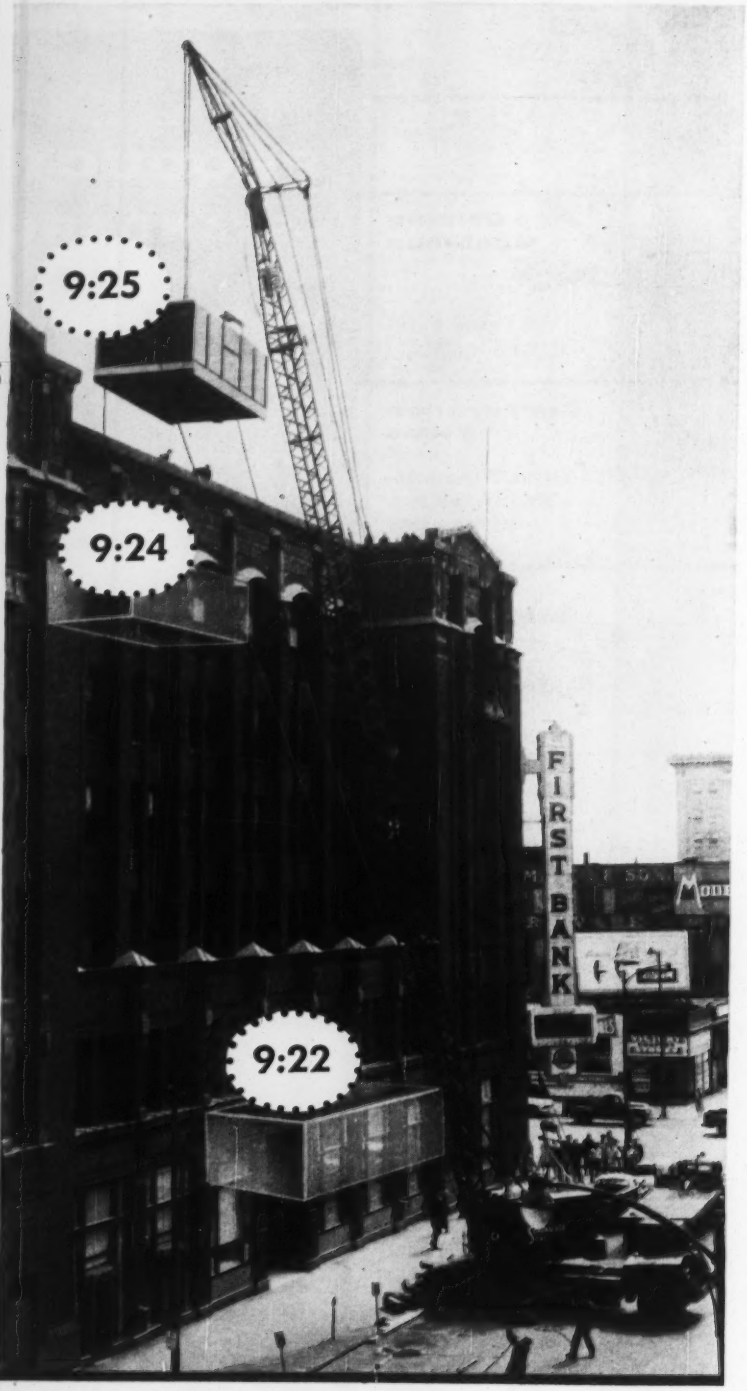
Schumacher used 110 foot boom and 15 foot jib on his 25 ton

BAY CITY CRANEMOBILE

Three minutes from street to roof—180 seconds and an 8,000 pound air-conditioning unit was placed on top of the Associates Investment Building in South Bend, Indiana —six stories up!

This particular feat—achieved by Peter Schumacher Sons, Inc., general contractors and engineers—was amazing enough to the public so that it was televised and featured in the local newspaper. Yet CRANEMOBILE users know a CRANEMOBILE takes on jobs like this in stride!

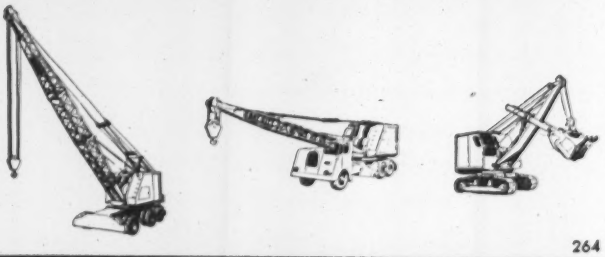
High lifts are only one phase of a CRANEMOBILE'S work, for a CRANEMOBILE is a busy CONTRACTOR'S most versatile, most profitable piece of equipment. For lifting, loading, pouring and dozens of other work-projects a BAY CITY CRANEMOBILE'S power, smoothness of operation, ease of control, balance, and speed are paying dividends to owners everywhere. Call your dealer or write direct for illustrated catalog.



BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



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Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, Apr 11; Next, May 16
- Wood Products, Glass, Explosives, chemicals: Last, Apr 18; Next, May 23
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Apr 25; Next, May 30
- Wage Rates, Building Board, Lath, Insulation: Last, May 2; Next, May 30

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del. 80 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.31a	$3.90a	$3.87	$2.18	$2.28	$2.50‡	$2.18	$2.33	$1.58	$1.65	$0.175	$	$13.75g
Baltimore	4.42c	4.01c	3.49c	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18	.18a	12.95
Birmingham	4.08	3.15af	....	2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	.18	.18	12.55
Boston	5.25be	4.67a	4.79e	3.00a	3.00a	3.00a	1.75a	1.85a	....	....	.23	.275a	15.00h
Chicago	4.13a	3.72a	3.87	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	.35	.35b	13.50
Cincinnati	4.46c	4.05c	4.03	2.29‡c	2.34‡c	2.34‡c	2.64‡c	2.64‡c	....	....	.19	.24a	13.25
Cleveland	N.A. in C.L.	3.74	....	2.15ef	1.95f	1.65	4.30‡a	4.30‡a	3.35‡a	3.35‡a	....	.23	16.15
Dallas	3.55a	3.15a	3.43	2.60	2.65	1.98	2.43	2.63	....	....	....	.27	11.25
Denver	4.69a	4.19a	4.69	1.90	2.05	1.20	....	....	....	....	.22	.245a	10.70
Detroit	4.10a	3.60ag	3.73	4.50‡b	4.50‡b	4.25‡b	3.75‡	3.75‡	3.50‡	3.50‡	.23	.24a	14.20
Kansas City	4.45b	4.25b	4.25	....	....	1.70‡a	2.00‡a	2.00‡a	....	....	.21a	.24c	13.50
Los Angeles	5.12ek	4.68ek	5.60	2.41‡a	2.76‡a	2.41‡a	2.46‡a	....	....	....	.14½/m	.235m	12.95h
Minneapolis	4.68a	4.27a	4.27	2.70‡ag	2.70‡ag	1.60‡ag	3.25‡ag	3.25‡ag	....	....	.19	....	14.30/
Montreal	3.11d	2.86d	3.50	1.95‡a	2.20‡a	2.25‡a	1.95‡a	2.20‡a	2.00	2.00	.20	.20a	10.81ak
New Orleans	3.75a	3.45a	3.70	2.44	2.44	2.00	....	....	1.45	1.65	.275	....	13.65
New York	4.79a	4.38a	3.88	3.05‡k	3.05‡k	2.30‡k	2.90‡l	2.90‡l	....	....	.25	.30‡	16.75an
Philadelphia	4.49/4.84‡a	4.09/4.46‡a	3.70/4.33‡	2.85‡op	2.85‡op	2.35‡op	2.70‡	2.90‡	2.00	2.35	.24/.30	....	13.80de
Pittsburgh	4.15a	3.76a	3.75	2.40‡	2.40‡	2.20‡	2.60‡	2.80‡	2.15	2.15	.25d	.31	14.00
St. Louis	4.01/4.33e	3.61/3.93e	3.86/4.18	3.25am	3.10am	2.40/3.10am	1.60‡	1.70‡	....	....	.24	.30e	12.40/12.90
San Francisco	3.94c	3.54c	....	2.02	2.02	2.12	2.17	2.17	....	....	.24	.23al	12.75c
Seattle	4.30a	3.75a	....	4.00‡bm	4.00‡bm	4.00‡bm	4.50‡bm	4.50‡bm	....	....	.26	.27c	13.30g
Toronto	4.03	4.03	4.03	2.40‡	2.40‡	2.05‡	2.20	2.20	2.20	2.20	.25	.29c	15.25

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a Less 10¢ disc, 15 days. *b Less 2% disc, 15 days. *c Less 10¢ disc, 10 days. *d Truckload lots, deliv. 10¢ disc, 20 days. *e Truckload lots *f Fob mill, add $13.89 to $20.31 per car switching charges *g fob mill + freight *h LCL.

SAND GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e ½". *f Pea gravel. *g Less 5% for cash. *h Less than 5 tons. *i Plus 5% mun. & prov. tax *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *o 1-3 mi zone. *p Add 10¢ for ea. add'l mi zone.

CONCRETE BLOCK: *a Cinder *b Waylite. *c Haydite. *d Calocrete *e 8¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i Less 2% for cash *l F.o.b. plant San Rafael. *m F.o.b. yard.

READY MIXED CONCRETE: *a 5 cu. yds. or over del. Man. *b 28 cu. yds or more *c 10-100 cy. brackets. *d 1-3 mi. zone. *g 2,000 lb comp. *f 2,500 lb. comp. *g Less 25¢ disc, 15 days. *h Less 50¢ for cash. *i 8% off for cash. *j 2% off for cash. *k Federal tax included. Add 5% mun. & prov. *l 1:2½:3½. *m F.o.b. yard *n Plus escalator clause. *o Add 15¢ for ea. add'l 3-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.30†	Buffington, Ind	$3.25†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.30†	Toledo, O	$3.30†
Clinchfield, Ga	3.30†	Independence, Kan	3.10†	Leeds, Ala	3.15†	Saginaw, Mich	3.30†	Milwaukee, Wis	3.35†
Kingsport, Tenn	3.30†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.30†	Green Bay, Wis	3.35†
West Des Moines, Iowa	3.35†	Northampton, Pa	3.35†	Hudson, N. Y	3.35†	Buffalo, N. Y	3.40†	Ironton, O	3.30†
Nazareth, Pa	3.35†	Universal, Pa	3.45†	Alpena, Mich	3.20†	Oswego, N. Y	3.45†	Montreal City	2.55†
Bath, Pa	3.35†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.30†	Cleveland, O	3.35†	W. Winfield, Pa	3.45†
Lesley, Pa	3.35†	Giant, S. C	3.35†	Howes Cave, N. Y	3.35†	Alsen, N. Y	3.35†	Security, Md	3.35†

† *Prices to hold for second quarter of 1957.*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	.....	.....	.....	$30.50	$45.00	$0.26	....	$0.125Pw	$0.28Pw	$0.14	$0.125	$0.30
Baltimore	180.00‡	.....	.....	23.00s	....	.095s	0.185t	10swE	19swE	.10t	.105s	0.195t
Birmingham	.....	62.00t	.....	....	....	....	....	....	....	....	....	....
Boston	.....	.....	.....	24.00ap	46.00ap	24.00as	46.00as	11aFw	24*Fw	.11ao	.174aGo	.25aGo
Chicago	180.00‡	90.00‡b	3.95/4.00‡j	24.05b	34.05b	21.40bs	31.40bs	11bwH	19bwH	.085b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	.....	82.00d	6.30g	25.00A	.....	25.00A	.....	1115AswF	.....	.....	.1115AG	.21AG
Dallas	s	40.00	s	26.35	45.39	.1116	.1944	29.80	51.40	.1080	.1116	.1994
Denver	.....	50.00	.....	....	....	....	....	....	....	....	....	....
Detroit	.....	112.00	.....	32.45	.....	31.45s	.....	1338swI	.....	.1133	.....	.35
Kansas City	s	s	s	21.00cl	.....	21.00s	.....	0975swJ	.....	.085s	0.125s	.....
Los Angeles	s	.....	s	18.50dms	.....	18.50dss	.....	20.00dx K	.....	19.00ds	.09j	.19j
Minneapolis	.....	.....	3.73k	29.50	.....	29.50	.....	0.125sw	.....	0.115	.134	.....
Montreal	s	s	s	32.50n	44.80n	.176n	.226n	18.70swE	23.70swE	.154n	.242ns	.270ns
New Orleans	.....	.....	.....	17.60s	.....o	17.60es	.....o	.085sw	.....o	.085B	.09BL	.....
New York	.....	.....	3.70f	26.89qCD	47.32qD	26.89wCD	47.32wD	1273swCDF	2139swDF	.....	.1273CD	.2168D
Philadelphia	175/185	110/120	4.06	22.00	....	22.00	....	.095swF	....	.095	....	....
Pittsburgh	165.00	48.00	4.60	27.00	38.00	.10	.21	27.00E	40.00E	.098	.11	.234
St. Louis	.....	.....	.....	20.63f	....	.1764	....	0925fswM	....	0.18	.105	....
San Francisco	.....	70.00s	.....	23.00g	40.00g	23.00gks	40.00gks	24.00gN	41.50gN	23.75sg	.10y	.19y
Seattle	.....	.....	.....	27.00s	40.50k	27.00s	....	28.50K	....	24.75sy	.10k	.11kr
Toronto	.....	.....	4.50	40.10	59.38	0.2045	0.2445	0.214sw	0.258sw	0.198	0.218	.271

‡ Delivered.

PAVING BRICK & BLOCK: *a Not used. *b 3 x 4 x 8. *c 2¼ x 8¼ x 4. *d LCL, truck deliveries. *e 2" interior 8¢ treat. *g 3" *h 2" tr, 8¢ *i 3 x 3½ x 8½. *j 2½", 6 lb. tr.

ASPHALTS: *a Price at plant, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segunda. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. Richmond, Calif. *h F.o.b. Martinez. *j F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 penetr. *l Less than 100 penetr. *m 40/80 penetr. *n Fed. tax included; add 8% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *q 40/85 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 85/200 penetr. *u Per 100 gal. *y Per ton. *w Per gal. *z Also tank trucks. *y F.o.b. Oakland *z F.o.b. Edmonds *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *C Bulk. *D Prices based on transporting to Manhattan via truck. *E RC. *F Also RC. *G Also MS, SS. *H RC 0-5 incl. *I MC 4. *J MC, RC .0875. *K MC 3, 4 & 5. *L MS. *M MC 1-5, RC 1-5, .089. *N MC 3. *O Truckload *P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **R. I., Smithfield**—SHOP, etc.—BA 5/17—U. S. Eng., 150 Causeway St., Boston, Mass., field maintenance shop with outside utilities, North Central State of R. I. Airport. $350,000-$450,000. CD 8/4/55.

† **R. I., Newport**—RECREATIONAL FACILITIES—BA 5/21—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston 19, Mass., recreational facilities, field house, U. S. Naval Station, NBy-5060, Spec. 5060/57. Plans deposit $30. CD 8/27.

▲† **Mass., Falmouth**—HOUSING—BA On Or About 5/24—U. S. Eng., 150 Causeway St., Boston, 200 unit family housing at Otis Air Force Base, CNG-19-016-57-209. $2,750,000-$3,000,000. CD 8/21/56.

BUILDINGS—BA

† **Mass., Falmouth**—SCHOOL—BA 5/14—U.S.A.—Regional Engr.—Housing & Home Finance Agency, 346 Broadway, New York, N. Y., elementary school, Otis Air Force Base. $350,000. Plans deposit $7.50. Walter M. Gaffney Assoc., West Main St., Hyannis, archts.

R. I., Kingston—DORMITORIES—BA 5/14—State R. I. and Prov. Plants, State House, 2 men's dormitories, Bid 949—Proj. NRI-1-2, HHFA Proj. R. I. 37-CH. $800,000. Plans deposit $100. Joseph M. Mosher & Son, Inc., 77 Washington St., Providence, archt. CD 10/11.

▲ **Conn., Newington**—SCHOOL—BA 5/23—School Bldg. Com., Town Hall, Newington Junior High School. $1,625,000. Plans deposit $50. CD 1/21.

▲ **Conn., Darien**—SCHOOL—BA 5/24—Town of Darien, Supt. Schools, 2 Renshaw Rd., high school. $3,400,000. Plans deposit $40. CD 6/25.

HEAVY CONSTRUCTION—LB & CA

† **Consolidated Constructors, Inc.**, 807 Congress St., Portland, Me., LB **$285,990**, est. $286,890, CHAPEL with educational wing Dow Air Force Base. ENG-19-016-57-50, BANGOR, ME., U. S. Eng., 150 Causeway St., Boston, Mass. CD 4/2/57.

† **National Constr. Co.**, 767 E. 3rd St., South Boston, Mass., LB **$491,859**, est. $414,975, rehabilitation bldgs., Otis Air Force Base, ENG-19-016-57-194, FALMOUTH, MASS., U. S. Eng., 150 Causeway St., Boston, Mass. CD 4/2.

▲ **RHODE ISLAND**—State R. I. & Prov. Plants, Div. Purchase, State House, Providence,

Campanelli & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., LB **$1,019,120**. Louisquisset Pike urban exten. Branch Ave. to Olney Pond R. I. Cont. 4702, F.A. Proj. F-035 (5) North Providence and Lincoln. Bids Apr. 24. CD 4/15.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford. Bids opened 4/25.

Conn.—**S. Ippolito & Sons, Inc.** and **Albert A. Lutz Co. Inc.**, 122 Selleck St., Stamford, Conn., LB $750,000 (10 bidders) Proj. 315-09, Group B, 50-stall maintenance and repair garage, incl. salt storage bldg., jet sander bldg., chloride and joint filler bldg., etc. Conn. Turnpike, Milford.

Conn.—**Pearce Constr. Co., Inc.**, 1626 Hartford Turnpike, North Haven, Conn., LB $561,400 (6 bidders) Proj. 322-03, Group D, 35-stall maintenance and repair garage incl. salt storage bldg., jet sander bldg., chloride and joint filler bldg. parking areas, etc. Conn. Turnpike, Old Saybrook. CD 4/5.

BUILDINGS—LB & CA

▲ **Vara Constr., Inc.**, 718 Huntington Ave., Boston, Mass. CA $2,110,517. HIGH SCHOOL, North and Old Westford Rds., CHELMSFORD, MASS. Town, School Bldg. Comn., 50 Billerica St., Chelmsford, Mass. CD 4/22 under LB.

▲ **G & F Constr. Co. Inc.**, 20 Ridgewood Rd., Waterbury, Conn., Owner Builds, $1,134,000. 60 HOUSES, White Turkey Road, BROOKFIELD, CONN.

Barber & Stevens, Inc., 36 Woodland St., Hartford, Conn., Owner Builds, $410,000. 40 HOUSES, Parvon Rd., water supply pipe lines, COLCHESTER, CONN.

J. S. Nasin Constr. Co., North Windham Rd., Williamantic, Conn., CA $583,000. north-west and south-east elementary SCHOOLS, MANSFIELD, CONN. Mansfield Public Schools, Office of the Supt., R.F.D. No. 2, Box 248, Storrs, Conn. CD 3/12, under LB.

▲ **Town Bd. Educ.**, 22 Liberty St., Meriden, Conn., rejected bids Apr. 25, East Side HIGH SCHOOL, East Main St., MERIDEN, CONN. Est. $2,883,000. Will re-advertise. CD 4/24.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

D. C., Wash.—BA 5/14—D. C. Govt., Dpt. Sanitary Eng., 499 Pa. Ave. N.W., sewage treatment plant addns., Secondary Treatment Plant Unit 23. Plans deposit $50. Extended date. CD 4/8.

N. Y., White Plains—BA 5/15—Westchester Co., Dpt. P. Wks., County Office Bldg., Contr. No. 954, trunk sewer relocation, Sect. G, Part III, Sawmill Proj., Greenburgh. Plans deposit $15.

BUILDINGS—BA

Md., Upper Marlboro—COURT HOUSE—BA 5/17—Prince George's Co., county court house addn. Plans deposit $50. Walton & Maddon, 3510 Rhode Island Ave., Mount Ranier, archts. CD 4/17/56.

HEAVY CONSTRUCTION—LB & CA

▲† **Great Lakes Dredge & Dock Co.**, 17 Battery Place, New York 4, N. Y. CA **$1,802,565**, est. $1,477,774. (2 bidders) dredging and rock removal to depth of 37 ft. below mean low water from New York and New Jersey Channels, Sect. 4 Rock area 11, Middlesex and Union Counties, N. J. and Richmond Co., N. Y., CIVENG-30-075-57-67, NEW YORK AND NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 4/11, under LB.

Woodcrest Constr. Co. & Wheeler Eng. Co., 369 Lexington Ave., New York 17, N. Y., LB **$945,660** (8 bidders) reconstr. west approach of Roosevelt Ave. Bridge over Flushing River, NEW YORK. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Apr. 26. CD 4/2.

▲ **NEW YORK**—John W. Johnson, supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y.—**Zara Contracting Co., Inc.**, Engel St., Hicksville, N. Y. CA **$1,776,975**. reconstr. 1.59 mi. sect. Peninsula Blvd. with four-lane divided c. conc. from Southern State Parkway to Hempstead-Farmingdale Turnpike (Rte. 24) incl. constr. two small stream bridges and 0.31 mi. access roads, Nassau Co.;

N. Y.—**Potter-DeWitt Corp.**, Pavilion, N. Y. CA **$873,482**. wid'n. resurf. 1.47 mi. sect. of Rte. 17 in vicinity of Horton's Crossing west of Owego 1.58 mi. sect. of Rte. 17C from Owego's corporation line eastward and 1.88 mi. sect. of Rte. 17C immediately east of Campville, Tioga Co.;

N. Y.—**Torrington Constr. Co., Inc.**, P.O. Box 336, 116 East Main St., Torrington, Conn. CA **$977,288**. wid'n. reconstr. 8.86 mi. sect. of Rte. 9 starting at Elizabethtown and exten. northward through Lewis to the intersection with town road to Reber, Essex Co.;

N. Y.—**Collins Brothers, Inc.**, 12 Tallmadge Place, Mechanicville, N. Y. CA **$794,424**. reconstr. 2.26 mi. sect. of Rte. 9 starting in vicinity of North Hudson-Elizabethtown town line near Underwood and exten. generally northward toward New Russia to point about 1 mi. north of Rte. 9 and 73 intersection, Essex Co. Grand total $4,422,169. CD 3/22, under LB.

▲ **NEW YORK**—John W. Johnson, supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York 16, N. Y. CA **$3,458,240**. 6 concrete piers required for anchorage and support of main spans of suspension bridge to be built across St. Lawrence River connecting Chimney Point, north of Ogdensburg with Johnstown in Canada, St. Lawrence Co. (and Grandville, Ont., Canada). CD 3/22, under LB.

Fischbach & Moore, Inc., 226 E. 41 St., New York 17, N. Y., LB **$677,993** (4 bidders) furnishing, installing electrical facilities for coal handling equip. for 59th St. Power Plant, Manhattan Boro, Contr. P-116, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Apr. 26. CD 3/27.

▲† **Araco & Kimberly Constr. Co.**, Flourtown, Pa. LB **$1,073,499**, storage facilities, McGuire Air Force Base, ENG-36-109-57-55, WRIGHTSTOWN, N. J. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Apr. 25. CD 3/21.

▲ **PENNSYLVANIA**—Pa. Hy. Dpt., 506 North Office Bldg., Harrisburg,

McCloskey & Co., 1620 W. Thompson St., Phila. 21, Pa., LB **$8,153,024**, (5 bidders) two plate girder bridges 3,892 ft. Roosevelt Ave. Exten., Philadelphia L. R. 67058 (1), Philadelphia Co. Bids Apr. 26. CD 4/3.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, Pa., Bids opened 4/26,

Pa.—**Nello L. Teer Co.**, Box 113, Durham, N. C., LB **$3,165,482** (5 bidders) 32,694 ft. divided hy. of c.-conc., 24 ft. wide, 1 deck girder bridge, T. R. 15, York and Cumberland Counties;

Pa.—**Diehl & Lick**, Route 209, Weissport, Pa., LB **$655,959** (6 bidders) 18,751 ft. crushed aggreg. base with bit. T. R. 12, Northampton Co.;

Pa.—**Dinardo, Inc.**, 331 Bouquet St., Pittsburgh, Pa., LB **$1,772,732** (5 bidders) 887 ft. c. conc. base with bit. and ramps, T. R. 22-30, Allegheny Co.;

Pa.—**Hull Resurfacing, Inc.**, Box 548, Butler, Pa., LB **$114,687** (3 bidders) surf. 55,866 ft. existing road with bit. and overlay with crushed aggreg. base and bit. L. R. 10033-57-59, Butler Co.;

Pa.—**Putnam & Greene, Inc.**, Box 2012, Station A, Fort Wayne, Ind., LB **$1,633,341** (5 bidders) 37,694 ft. crushed aggreg. base with bit. T. R. 879, Clearfield Co.;

Pa.—**Neyer Bros. Constr. Co.**, 1227 W. 18 St., Erie, Pa., LB **$154,257** (3 bidders) channelization of 4 hy. intersections traffic islands, divisor areas 5,494 ft. T. R. 20-5, Erie Co.;

Pa.—**A. G. Moyer**, Lemont Furnace, Pa., LB **$140,789** (3 bidders) surf. 69,829 ft. existing road with bit. T. R. 480, Indiana Co. CD 4/3.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2. Bids opened Apr. 23,

Princemont Constr. Corp., Rockville, Md. LB **$418,580** (9 bidders) dual 4 span steel beam bridges over Washington Circumferential Hy. on John Hanson Hy. 258 ft. long, 49 ft. wide, P 631-33-320, Prince George's Co. CD 4/11.

Young & Crary, Inc., 1312 62 Ave., Hillside, Md., LB **$613,539** (7 bidders) first section of Southwest-Southeast freeway, consisting of 734 ft. bridge to cross Fourth St. S.W., WASH., D. C. D. C. Govt., Dpt. Hys., 499 Pa. Ave. N.W., Wash., D. C. Bids Apr. 19. CD 3/26.

BUILDINGS—LB & CA

Congregation B'Nai Israel, Broadway and Mount Ave., Freeport, N. Y. Separate Contracts. $500,000. SYNAGOGUE and RELIGIOUS SCHOOL, North Bayview Ave., FREEPORT, N. Y. CD 3/13.

Grayco Builders, 10621 Continental Ave., Forest Hills, N. Y., CA $775,000. general constr., plumbing work, heating, ventilating, refrigeration and sprinkler work, electrical work and lighting fixtures for constr. STORES DIVISION BLDG. at Queens Hospital Center, Goethals Ave. and Parsons Blvd., JAMAICA, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Mar. 13. CD 2/25.

Peter Robi Co., Inc., West Bridge and Third Ave., Oswego, N. Y. LB **$418,402** (13 bidders) DINING FACILITY BLDG., Oswego State Teachers College, OSWEGO, N. Y. State Dormitory Auth., 55 Grant Ave., Albany, N. Y. Lorimer Rich & Assocs., 35 W. 53 St., New York, N. Y., archts. Bids Apr. 11. CD 3/26.

▲ **Frank Lewis & Sons, Inc.**, Bainbridge, N. Y. 52,000 ft. PLANT addn. to electrical connector, SIDNEY, N. Y. Total est. **$2,000,000**. Bendix Aviation Corp., Scintilla Div., Sherman Ave., Sidney, N. Y. L. Rossetti, (Giffels & Vallet) 1000 Marquette St., Detroit, Mich., engr.;

Belmont Iron Works, 22 and Washington St., Phila., Pa., steel (Sidney, N. Y.);

Burns Bros., 631 W. Beldon St., Syracuse, N. Y., Mechanical work (Sidney, N. Y.);

Osborne Electric Co., Norwich, N. Y., electrical work, (Sidney, N. Y.).

(Continued on page 116)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

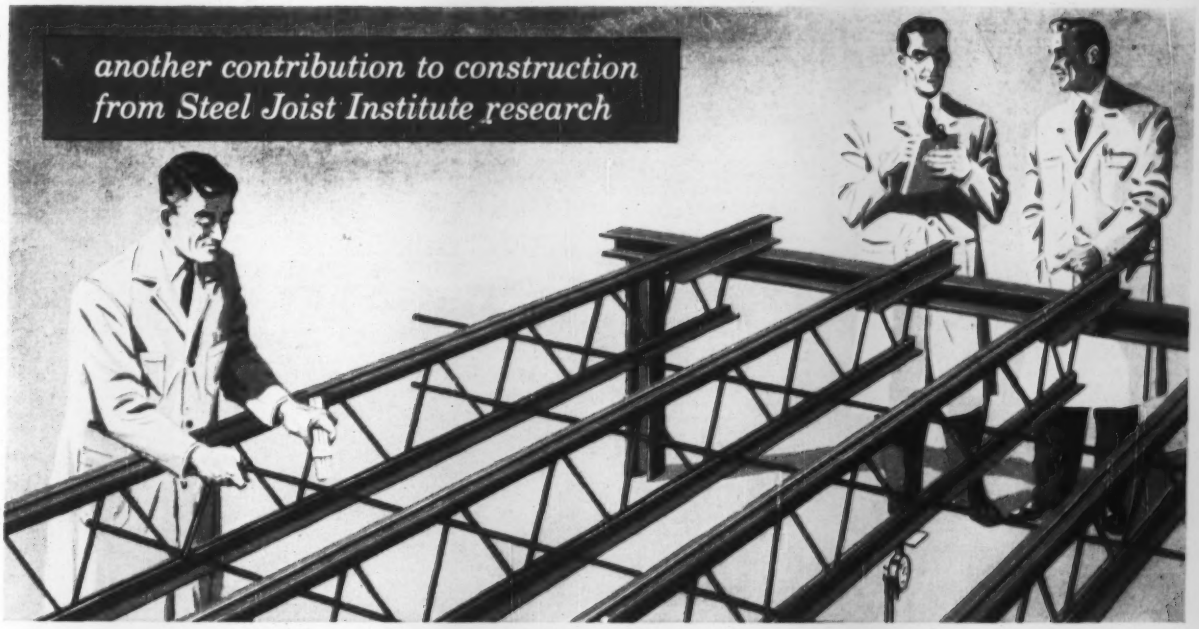
CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.



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GABRIEL STEEL COMPANY
LACLEDE STEEL COMPANY
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Name _____
Company _____
Address _____
City _____ Zone _____ State _____

(Continued from page 114)

W. J. Burns Co., 205 Harrison St., Syracuse, N. Y. LB **$499,300** (9 bidders) FACULTY RESIDENCE, SYRACUSE, N. Y. LeMoyne College, Salt Springs, Rd., Syracuse, N. Y. Bids Apr. 12. CD 12.

▲ **Vanadium Alloys Steel Co.**, Latrobe, Pa., Owner Builds. **$1,500,000.** brick, steel MILL expansion, LATROBE, PA.

Mellon Stuart Co., 210 E. Parkway N.S., Pittsburgh, Pa. CA Est. **$350,000.** 3 story, bsmt., brick, steel MEDICAL BLDG., MOUNT LEBANON, PA. Mount Lebanon Profession Bldg., 528 Washington Rd., Pittsburgh, Pa. Arthur Tennyson, 666 Washington Rd., Pittsburgh, Pa., archt.

▲ **Uris Properties, Inc.**, 300 Park Ave., New York 22, N. Y., Owner Builds. **$15,000,000.** 20 story, OFFICE, 2 Penn Center on Pennsylvania Blvd. (second bldg.) PHILA., PA. Emery, Roth & Sons, 575 Madison Ave., New York 22, N. Y., archts. CD 11/23/55.

Mellon Stuart Co., 210 E. Parkway, N.S., Pittsburgh, Pa. CA Est. **$300,000.** 3 story, brick, concrete parking GARAGE, PITTSBURGH, PA. University of Pittsburgh, Fifth and Bigelow Blvd., Pittsburgh, Pa. Eggers & Higgins, 100 E. 42 St., Pittsburgh, Pa., archts.

▲ **Mt. Lebanon Builders, Inc.**, 470 Washington Rd., Mount Lebanon, Pittsburgh, Pa. CA **$1,320,282.** 1 and 2 story, brick, block 132,000 sq. ft. L-shaped Great Valley SHOPPING CENTER, North Versailles Twp., near McKeesport, PITTSBURGH, PA. Great Valley Mart, Inc., Oliver Bldg., Pittsburgh, Pa. CD 3/18, under LB.

National Realty Corp., 3004 Ridgewood Ave., Baltimore 15, Md. Owner Builds. **$535,000.** 39 brick frame HOUSES, Fair Oaks Ave., Pinewood Ave., Laurelton Ave. and Northern Parkway, BALTIMORE, MD.

SOUTH

HEAVY CONSTRUCTION—BA

† **Fla., Pensacola**—CANTEEN RENOVATION—BA 5/21—Officer in Charge of Constr., Building 45, U. S. Naval Air Station, Pensacola, Navy Canteen renovation, Hangar 809, Naval Auxiliary Air Station, Saufley, NBy 8731, Spec. 8731/56. CD 8/27.

† **Georgia**—BA 5/28—U. S. Eng., 2301 Grant St., Mobile 7, Ala., addnl. facilities, incl. floating boat dock, and pontoon floats, utility bldg., 2 comfort stations, well pump house, 15,000 gal. elevated water tank and overlook shelter, Buford Dam, CIVENG-01-076-57-80. Extended date. CD 3/8.

BUILDINGS—SLC

Fla., Pompano Beach—HOTEL—Pompano Beach Village Resort, Inc., Pompano Beach, soon lets contract, 7 story, 49x97 ft., Pompano Apartment Hotel with paved parking areas, 830 N. Ocean Blvd. Todd & Wiesman, 3220 Atlantic Blvd., archts. D. F. Britt Assocs., 309 S.E. 9 Ave., Fort Lauderdale, struc. engr. George L. Cadenhead, 302 S.E. 11 Ave., Fort Lauderdale, mech. engr.

HEAVY CONSTRUCTION—LB & CA

† **Whitlock-Dunn**, 3408 Geo. Washington Hy. Portsmouth, Va. LB **$996,398** (4 bidders) fire control and special projects bldg., Naval Air Station and Naval Aviation Test Station, NBy 7726, Spec. 7726/56, CHINCOTEAGUE, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Apr. 23. CD 4/22.

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comm., Raleigh. Bids opened 4/23.

N. C.—**Bowers Constr. Co. Inc.**, Box 1706, Raleigh, N. C., LB **$638,471**, est $400,000-$500,000. bridge and approaches U. S. 74, Proj No. 6100, F-169 (22) Anson and Richmond Counties, CD 4/15.

N. C.—**Claude C. Wheeler, Inc.**, Box 602, Oxford, N. C. LB **$685,365**, est. $400,000-$500,000. structure US 1 (relocation) 12.7 mi. Proj. 4950 I-668 (6), Vance and Warren Counties;

N. C.—**Dickerson, Inc.**, Monroe, N. C., LB **$118,072**. est. $125,000-$150,000. structures U.S. 74, 11.11 mi. Proj. 8238, F-150 (9) and U0150 (10) Cleveland Co. CD 4/15, under Streets and Roads.

▲ **NORTH CAROLINA**—State Hy & P. Wks. Comm., Raleigh Bids opened 4/23.

N. C.—**Asheville Paving Co.**, Box 7068, Asheville, N. C., LB **$191,359**, est. $200,000-$225,000. b. conc. binder and surf. 15.13 mi. NC 63, Proj 9056, S-246 (3), S-297 (7), B.S. 13-6-84-166 Buncombe Co.;

N. C.—**Burns & Spangler**, 600 Peach St., Shelby, N. C., LB **$244,528**, est. $300,000-$400,000. grading 11.11 mi. US 74, Proj 8238, F-150 (9), U-150 (10) Cleveland Co.;

N. C.—**Wm. B. Dillard Constr. Co., Inc.**, Sylva, N. C., LB **$185,824**. CABC, bit. and structures, 272 mi. O-705, Transylvania Co.;

N. C.—**M. R. Keech**, Pinetown, N. C., LB **$118,391**, est. $100,000-$125,000. grading 3.87 mi. county road, Proj 1-653, S-890 (1), Pasquotank Co.;

N. C.—**Dickerson, Inc.**, Monroe, N. C., LB **$279,516**, est. $300,000-$400,000, grading 6.83 mi. U.S. 301 Proj 2962, Johnston and Wilson Counties;

N. C.—**Charles R. Shepherd, Inc.**, Doraville, Ga., LB **$873,971**, est. $400,000-$500,000. grading 12.7 mi. U.S. 1 (relocation) Proj 4970 I-668 (6), Vance and Warren Counties;

N. C.—**Clinchfield Concrete Co., Inc.**, Kingsport, Tenn., LB **$2,602,493**, est. over $1,000,000. stab. aggreg. base and bit. sub-grade rein.- and 9-in. c. conc. 14.87 mi. US 29, Proj. 6736, I-708 (3), F-708 (4), Rowan and Davidson Counties;

N. C.—**Midstate Contractors, Inc.**, Box 2401, Hickory, N. C., LB **$199,721**, est. $300,000-$400,000. grading 2.73 mi. US 52, Proj. 7621, F-490 (6), Surry Co.;

N. C.—**W. E. Graham & Sons**, Cleveland, N. C., LB **$205,406**, est. $150,000-$175,000. CABC, bit. and structures 1.27 mi. US 321, Proj. 7705, SF-437 (4), Watauga Co. CD 4/15.

▲ **Gilbert Eng. Co., Inc.**, Statesville, N. C. LB **$1,678,676**, Catawba Creek Sewage Treatment Plant, GASTONIA, N. C. City, City Hall, Gastonia, N. C. Bids Apr. 16. CD 4/10.

MISSISSIPPI—State Hy. Dpt., T. C. Robbins, dir., Jackson,

cancelled bids to have been opened Apr. 23, base, double bit. surf. tr. bridge 0.394 mi. US Hy. No. 45 between Quitman and Meridian, Proj. F 025-1 (2), Clarke Co. Will re-advertise. CD 4/16.

▲ **MISSISSIPPI**—State Hy. Dpt., T. C. Robbins, dir., Jackson,

Miss.—**W. R. Aldrich & Co.**, 2493 Baywood Ave., Baton Rouge, La. CA **$1,266,234**, est. $1,430,000. grade, culverts, 2 hy. underpasses, 4 frontage road bridges, grav. base, double bit. surf. tr. 4.037 mi. U. S. Hy. No. 51 between Terry and Jackson, Proj. I 091-2 (11), Hinds Co.;

Miss.—**Dye & Coggin**, Tupelo, Miss. CA **$385,258**, est. $385,000. grade, culverts, 2 bridges 4.54 mi. Miss. Hy. No. 6 between Nettleton and Amory, Proj. F 053-1 (5) Monroe Co.;

Miss.—**Bowyer & Johnson Constr. Co.**, Jackson, Tenn. CA **$519,421**, est. $540,000. grade, culverts, railroad underpass, double bit. surf. tr. 3.134 mi. Miss. Hy. No. 13 at Pontotoc, Projs. F 022-4 (1) and FG 022-4 (2), Pontotoc Co.;

Miss.—**John H. Moon & Sons**, Ridgeland, Miss. CA **$446,912**, est. $520,000. grade, culverts, 1 bridge 1.552 mi. across Yazoo River on Miss. Hy. No. 12 between Mileston and Belzoni, Proj. F 018-1 (4), Humphreys Co.;

Miss.—**Brooks Constr. Co.**, Mendenhall, Miss. CA **$156,084**, est. $185,000. grade, temporary bridge, double bit. surf. tr. 4.287 mi. Miss. Hy. No. 17 between Camden and Miss. Hy No. 16, Proj. S 0518 (2) A, Madison Co.;

Miss.—**Worsham Bros.**, Corinth, Miss. CA **$985,962**, est. $1,200,000. grade, culverts, dual bridge 2 dual hy. overpasses, 1 hy. underpass 4.904 mi. U. S. Hy. No. 51 between Hernando and Aldens, Proj. I 091-4 (6), DeSoto Co. Grand total $3,759,871. Bids Apr. 23. CD 4/16.

BUILDINGS—LB & CA

▲ **John Heslep**, South Carolina Natl. Bank Bldg., Columbia, S. C. CA **$1,149,700**. MEN'S DORMITORY, COLUMBIA, S. C. University of South Carolina, Columbia, S. C. Bids Mar. 5. CD 3/18, under LB.

▲ **Daniel Constr. Co.**, Box 2286, Greenville, S. C. CA **$3,895,000**. TRANSFORMER MFG. PLANT, ATHENS, GA. Westinghouse Electric Corp., 3 Gateway Center, Pittsburgh, Pa. Bids Mar. 11. CD 3/18, under LB.

† **Lockheed Aircraft Corp.**, Marietta, Ga., rejected bids. RADIATION EFFECTS REACTOR BLDG. for Dpt. Air Force, DAWSONVILLE, GA. LB **$595,877**. Will re-advertise. CD 3/28.

A. B. Newton Co., Box 191, Vidalia, Ga. CA **$734,000**. low-rent HOUSING, GA-59-3 and GA-59-4, GAINSVILLE, GA. Gainesville Housing Auth., Gainesville, Ga. Bids Apr. 11, awarded Apr. 18. CD 4/19, under LB.

Chilton Constr. Co., Clearwater, Fla., CA **$535,363**. Highland JUNIOR HIGH SCHOOL, Dunedin, CLEARWATER, FLA. Bd. P. Instruction, Pinellas Co., Court House, Clearwater, Fla. Bids Feb. 27. CD 3/12, under LB.

Starrett Building Co., 1646 Monroe St., Hollywood, Fla. Owner Builds. **$546,463**, 27 APARTMENT BLDGS., McClellan St. and Pershing St., HOLLYWOOD, FLA. Herbert O. Ziegler, 10720 N.E. Peachtree Dr., Miami, Fla., archt.

F. R. Hoar & Son, Contg. Co., 2808-19th Place S., Birmingham, Ala. CA **$741,216** (11 bidders) 5-unit HIGH SCHOOL, Hueytown, BIRMINGHAM, ALA. Jefferson Co. Bd. Educ., Court House, Birmingham. Awarded Apr. 26. CD 1/9.

† **Catlett Constr. Co.**, 3601 Chapman Hy. S. W., Knoxville, Tenn. LB **$501,338.** Base Bid, est. $484,011. Oak Ridge MUNICIPAL BLDG., OAK RIDGE, TENN. U. S. Atomic Energy Comm., Oak Ridge, Tenn. Bids Apr. 23. CD 3/6.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Illinois—BA 5/15—Wabash R. R. Co., Wm. J. Hedley, ch. engr., 1402 Railway Exchange Bldg., St. Louis 1, Mo. 2 concrete abutments and 17 concrete approach piers for proposed vertical lift railroad bridge over Illinois River at Valley City. Plans deposit $10. Sverdrup & Parcel, Inc., 915 Olive St., St. Louis 1, Mo., engr. CD 11/30.

BUILDINGS—BA

Ill., Chicago—SCHOOL—BA 5/14—Bd. Educ., 228 N. La Salle St., 2 story John Joseph Pershing Elementary School, 31 and Cottage Grove Sts. $450,000. Skidmore, Owings & Merrill, 100 W. Monroe St., archts. CD 8/3.

▲ **Ill., Northbrook**—SCHOOL—BA 5/14—School Dist. 225, 2300 Shermer Rd., 1 and 2 story, brick Glenbrook High School addn. and swimming pool. $2,400,000. Perkins & Will, 309 W. Jackson Blvd., Chicago, archts. CD 11/16.

O., Oxford—MAINTENANCE—BA 5/14—Ohio Dpt. P. Wks., Ohio Depts. Bldg., Columbus, maintenance bldg. at Miami University, Plans deposit $15. Cyrus L. Baxter, Oak and Chestnut Sts., Cincinnati, Zone 27, archt. Fosdick & Hilmer, 1703 Fifth-Third Bank Bldg., Cincinnati, engrs. CD 3/1/56.

O., Marion—SCHOOL—BA 5/22—Ridgedale Local School Dist., Route 4, high school. $695,000. Plans deposit $10. Strong, Strong & Strong, 124 South West St., Lima, archts. CD 11/21.

O., Tiffin—RECEPTION, etc.—BA 5/24—Ohio Dpt. P. Wks., 705 State Dpts. Bldg., Columbus, 120-bed reception and intensive therapy unit, Tiffin State Hospital for Dpt. Mental Hygiene & Correction, $750,000. Plans deposit $20. Sims, Cornelius & Schooley, 2901 N. High St., Columbus, archts. CD 1/12/56.

O., Olmsted Falls—SCHOOL—BA 5/28—Olmsted Falls Bd. Educ., Bagley Rd. at Mapleway Dr., Olmsted Falls, 1 story, masonry, steel, concrete elementary school. Over $500,000. Plans deposit $35. Mellenbrook, Foley & Scott, 20 Beech St., Berea, archts. CD 11/9.

BUILDINGS—SLC

▲ **Ill., Chicago**—ACCOUNTING OFFICE—Illinois Bell Telephone Co., 208 W. Washington Blvd., soon lets contract 4 story, brick North Center Accounting Office Bldg., Grace and Western Ave. $1,000,000. Holabird, Root & Burgee, 180 N. Wabash Ave., archts. CD 1/14.

HEAVY CONSTRUCTION—LB & CA

▲ **The Hunkin-Conkey Constr. Co.**, 1740 E. 12 St., Cleveland, O., LB **$2,495,900** (3 bidders) (14 bidders bid on portion of project) Ridge Road incinerator, CLEVELAND, O. City, Dpt. P. Serv., Louis L. Drasler, dir., City Hall, Cleveland 14, O. Bids Apr. 25. CD 3/21.

▲ **Wander & Mason, Inc.**, 16 Leland St., Worthington, O., LB **$3,323,129.** sewage treatment plant expansion, COLUMBUS, O. City, City Hall, Columbus, O. CD 4/22/55.

▲ **O. R. Burden Constr. Corp.**, 702 E. 21 St., Tulsa, Okla., CA Est. **$5,000,000.** 201-mi. crude pipe line from East Chicago, Ind. to Cygnet, O., INDIANA and OHIO, Tecumseh Pipe Line Co., Independence, Kan.

† **Greene Constr. Co.**, Oaktown, Ind., LB **$675,889**, est. $591,121. (9 bidders) 4 pumping plants flood protection works, Vincennes, Knox Co., CIVENG-15-029-57-53, INDIANA, U. S. Eng. Box 59, Louisville 1, Ky. Bids Apr. 25. CD 4/15.

▲ **ILLINOIS**—Illinois State Toll Hy. Comm., 20 N. Wacker Dr., Chicago,

rejected bids Apr. 4, Contr. T-2-A, grading, drainage, paving, appurtenances, precast concrete and structural steel bridges 2.59 mi. from N.E. of Midlothian to point N.W. of 13 St. and Crawford Ave. in Alsip, Cook Co. LB **$5,677,957**. CD 4/11, under LB.

▲ **ILLINOIS**—Illinois State Toll Hy. Comm., 20 N. Waker Dr., Chicago,

L. G. Arnold Inc. 201½ N. Dewey St., Eau-Claire, Wis., LB **$3,977,569,** Cont T-13-B, grading, drainage, paving, appurtenances erecting precast concrete bridges 5.09 mi. beginning N. of Town Line Rd. and extending northerly N. of Skokis Hy., Lake Co. Bids Apr. 25. CD 4/10.

▲ **E. J. Albrecht Co.**, 2626 W. 26 St., Chicago, Ill., LB **$1,226,625**, Railroad Bridge No. 216 over Calumet Sag Channel, 22 mi. south of Chicago, ILLINOIS. B. V. Bodie, ch. engr. Gulf, Mobile & Ohio R.R. Co. 104 St. Francis St., Mobile, Ala. Bids Apr. 23. CD 4/11.

Sangamo Constr. Co., 700 N. McArthur St., Springfield, Ill., CA **$259,176** Section B, sewerage sys. extens., imprvs., EFFINGHAM, ILL. City, City Hall, Effingham, Ill., Awarded Apr. 22;
C. J. Moritz, Inc., and Maurz & Oren, Inc., Effingham, Ill., CA Section A, **$259,176** (Effingham, Ill.).

Lake Shore Constr. Co., 1900 Shermer St., Northbrook, Ill., LB **$587,561.** sanitary sewers, reservoir and pump station, MARKHAM, ILL. Village, Village Hall, Markham, Ill. R. W. Robinson, 1700 S. Park Ave., South Holland, Ill., engr.

BUILDINGS—LB & CA

▲ **The Dover Co.**, 12727 Buckeye Rd., Cleveland 20, O., CA Est. **$1,725,000.** 150 HOMES, Route 43 and Bissell Rd., AURORA, O. Aurora Acres, Inc., 12727 Buckeye Rd., Cleveland 20, O. Jack Alan Bialosky, NBC Bldg., Cleveland, Zone 14, archt.

▲ **Murphy Builders, Inc.**, 1531 Gardenwood St., Cincinnati, O., Own Forces, **$1,300,000.** 71 HOUSES, Eldora Dr., CINCINNATI, O. Nuntist & Frolicher, Traction Bldg., Cincinnati, O., engrs.

J. E. Warm Co., 2335 Florence Ave., Cincinnati, O., LB **$654,340** (5 bidders) Woodward JUNIOR and SENIOR HIGH SCHOOL ADDNS., Reading Rd. CINCINNATI, O. Bd. Educ., 608 E. McMillan St., Cincinnati, O. Bids Apr. 23. CD 4/4.

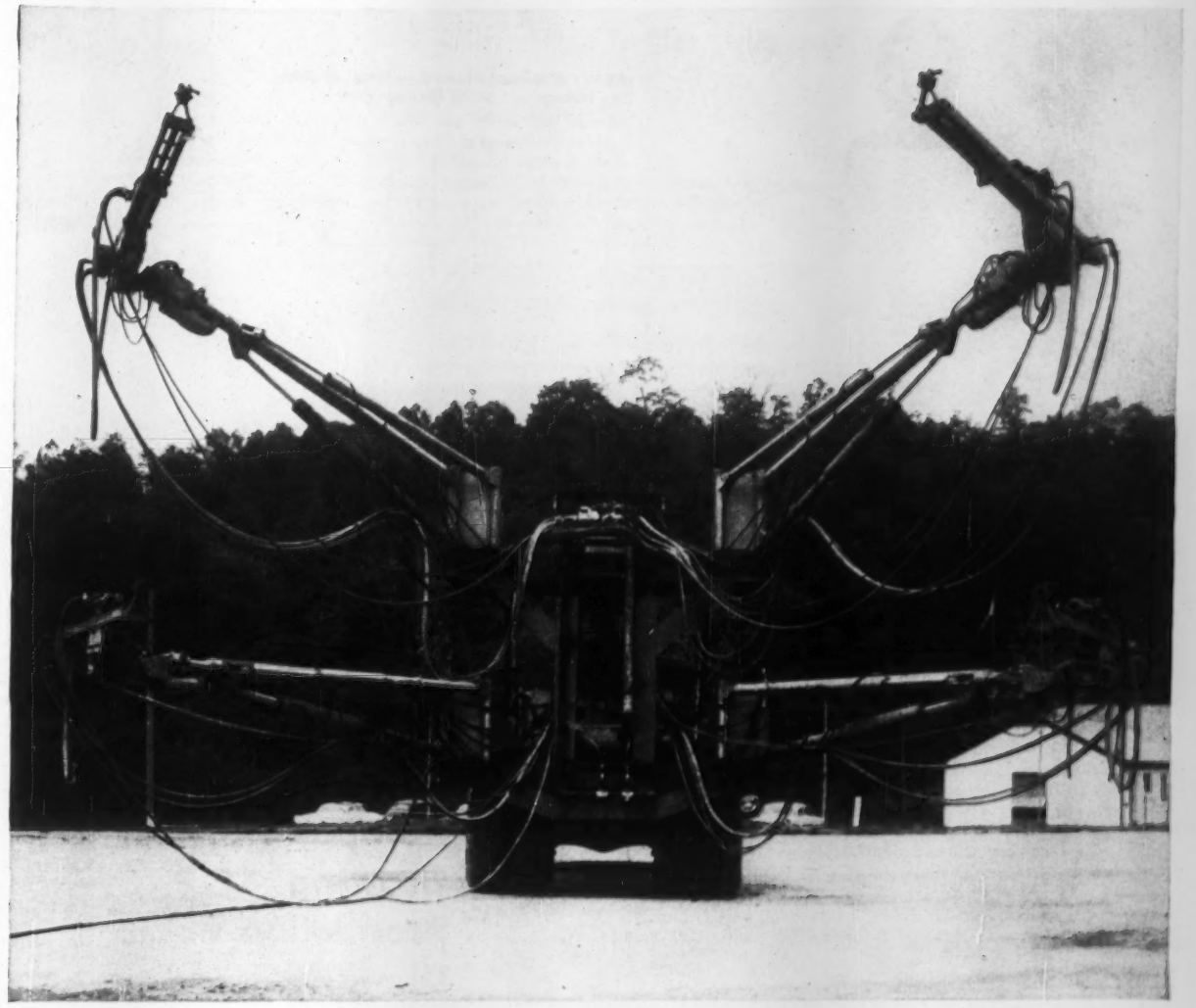
▲ **Mintz Constr. Co.**, 3121 Euclid Ave., Cleveland 15, O., Own Forces. **$2,500,000.** 4 story OFFICE, CLEVELAND, O. International Business Machines Corp., lessee. Irving D. Robinson, 4900 Euclid Ave., Cleveland 3, O., archt. Awarded Apr. 23.

▲ **DiCarlo Mason & Bldg. Co.** 5985 Mayfield Rd., Cleveland 24, O., Own Forces, **$4,000,000.** 137 HOMES, in Bremerton Subdivision on Brainard Rd., LYNDHURST, O. Wm. P. Tamerlano, 5711 Shawnee Rd., Cleveland 24, O. archt.

▲ **Luther T. Paterson & John J. Gillespie**, 60 Erskine St., Youngstown, O., Owner Builds, **$2,000,000.** 200 or more HOMES on 110-acre tract, adjacent to Lloyd School known as Sleepy Hollow Estates, 3 new streets and sewers, YOUNGSTOWN, O.

Thorp Constr. Co. Inc., 2520 Boonville Hy., Evansville, Ind., CA **$780,855**, general contract, HIGH SCHOOL addn., EVANSVILE, IND. School City of Evansville,

(Continued on page 120)



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(Continued from page 116)

School Office, 200 N.W. 7 St., Evansville, Ind. Bids Apr. 8. CD 3/22.

▲ **George P. MacDougall**, 505 W. 49 St., Indianapolis, Ind., CA Est. $1,000,000. limestone, brick REGIONAL OFFICE, State Rt. 100 and E. Washington St., INDIANAPOLIS, IND. Allstate Insurance Co., 7447 Skokie Blvd., Skokie, Ill. Bids Mar. 21. CD 3/20.

▲ **McCarthy Bros. Constr. Co.**, 4903 Delmar St., St. Louis, Mo., CA $2,000,000. 5 story bsmnt. Moreau SEMINARY, Notre Dame, SOUTH BEND, IND. Holy Cross Fathers, Notre Dame University, South Bend, Ind. Bids Apr. 8. CD 3/12.

Bowman Constr. Co., 1127 S. Branson St., Marion, Ind., CA $462,330. general contract 4 story 176-men DORMITORY and FOOD SERVICE CENTER, UPLAND, IND. Taylor University, Upland, Ind. Bids Apr. 3. CD 3/28.

Schless Constr. Co., 703 Rogers St., Downers Grove, Ill., LB $741,891, 1 story, brick GRADE SCHOOL, 75 and Cass Sts., CLARENDON HILLS, ILL. Lace Marion Hills School Dist. 61, Clarendon Hills, Ill. Wight & Schlaebitz, 935 Curtiss St., Downers Grove, Ill., archts.

Dahlman Constr. Co., 4200 N. 1 St., Milwaukee, Wis., CA Total est. $600,000. general contract 1 story, 131x233 ft., concrete, brick, block, stone, steel SCHOOL, MILWAUKEE, WIS. Northwest Lutheran School Assn., 1113 W. Center St., Milwaukee, Wis. Bids Mar. 26. CD 3/6;
Van der Linden Plumbing & Heating Co., 4417 N. 27 St., Milwaukee, Wis., CA heating and ventilating (Milwaukee, Wis.);
A. L. Sauer, Inc. 3909 N. 35 St., Milwaukee, Wis., CA plumbing contract (Milwaukee, Wis.);
Reliance Electric Co., 1101 W. Vliet St., Milwaukee, Wis., CA electrical contract (Milwaukee, Wis.).

Spence Brothers, 417 McCoskry St., Saginaw, Mich., CA Total est. $465,000, one story, 25 room COTTAGE with dining facilities at Michigan Girls Training School, ADRIAN, MICH., State, State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. CD 10/14/55;
Dunbar-Borton Co., Adrian, Mich., plumbing work for cottage (Adrian, Mich.);
O. K. Electric Co., Hillsdale, Mich., electrical work for cottage, (Adrian, Mich.).

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

Iowa, Sumner—BA 5/16—City, City Hall, sewage plant, $216,000, Buell & Winter, 513 Insurance Exchange Bldg., Sioux City, engrs. CD 10/11.

Nebraska—TRANSMISSION LINES—BA 5/18—Norris Rural Public Power Dist., Beatrice, transmission lines, Gage and Lancaster Counties. $225,000, Raymond H. Reed & Co., Columbus, engrs. CD 2/17/54.

Kansas and Nebraska—RURAL TELEPHONE—BA 5/22—American Communication Co., Belleville, rural telephone proj. 401.45 mi. incl. 450.9 mi. open wire; 10.05 mi. cable and 40.5 mi. services in Jefferson, Thayer and Nuckolls Counties, Neb. and Jewell, Republic, Clay and Riley Counties, Kan., Proj. Kan. 512-C-American, Nixon Eng. Co., 305 W.O.W. Bldg., Omaha 2, Neb., engrs.

† **Ark., Blytheville**—WAREHOUSE—BA 5/23—U. S. Eng., P. O. Box 867, Little Rock, 1 story, 2,500 sq. ft. with concrete fdn., and floors, cold storage warehouse, Item No. M-048 (N110) Bldg., Blytheville Air Force Base. ENG 03-050-57-42. $100,000-$500,000. CD 8/27.

† **Mo., Grandview**—OPERATIONAL TRAINING BLDG.—BA on or about 5/24—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., operational training bldg., Grandview Air Force Base, Eng—23-028-57-84.

† **O., Dayton**—POWER BUILDING, etc.—BA 5/28—U. S. Eng., P. O. Box 59, Louisville 1, Ky., power building and pump house, communications, General Wright Patterson Air Force Base, Eng—15-029,57-81. Approx. $75,000. CD 8/22.

† **Tex., Killeen**—POWER BLDG., etc.—BA 5/28—U. S. Eng., P. O. Box 1600, Fort Worth, sewerage system imprvs., ENG—41-443-57-44; power bldg., ENG—41-443-57-45, Gray Air Force Base.

† **Tex., Kingsville**—TRAINER BLDG.—BA 6/15—Officer in Charge of Constr., Administration Bldg. No. 1, Naval Air Station, Corpus Christi, constr. synthetic trainer bldg. at Naval Auxiliary Air Station, NBy 9014, Spec. 9014/56. $245,000. CD 3/28.

† **Colo., Colorado Springs**—SCIENCE—BA On Or About 6/18—Air Force Academy Constr. Agency, P. O. Box 1670, science bldg. (aero lab.) on Air Force Academy Site, approx. 8 mi. north of here. IFB 05-613-57-40. Plans deposit $30. CD 8/5/54.

BUILDINGS—BA

Colo., Denver—SCHOOL—BA 5/14—Holy Family Parish, 4364 Utica St., Denver, 2 and 3 story, 37000 sq. ft. HIGH SCHOOL addn. $400,000. Toll & Milan, 648 Sherman St., Denver, engrs.-archts. CD 1/16.

Tex., San Antonio—SCHOOL—BA 5/16—San Antonio Independent School Dist., Lavaca and Matagorda Sts., James Russell Lowell Junior High School, $700,000. Phelps & DeWees & Simmons, 342 W. Woodlawn St., bd. archts. Harvey P. Smith & Assocs., 117 El Prado Dr. West, admin. archts. Reynolds & Morgan, c/o Insurance Bldg., and Gerard M. Baker, Box 8127 Laurel Heights Station, engrs. CD 11/28.

▲ **Minn., St. Paul**—HOUSING—BA 6/4—St. Paul Housing & Redevelopment Auth., City Hall and Court House, 458 housing units, $5,350,000. Plans deposit $75. Walter Butler Co., 1300 Minn. Bldg., Zone 13, archt. CD 10/5/54.

BUILDINGS—SLC

▲ **Colo., Boulder**—HOSPITAL—Boulder Colo. Sanitarium & Hospital Assoc., Boulder, soon let contract, 3 story, bsmnt., 20-bed hospital addn. $800,000. E. Floyd Redding, 7970 W. 10 St., Lakewood, engr.-archt. CD 4/17.

▲ **Tex., Midland**—BANK, etc.—First National Bank, Main and Wall Sts., soon lets contract, bank and office, $1,000,000. George L. Dahl, 2101 N. St. Paul, Dallas, engr.-archt.

HEAVY CONSTRUCTION—LB & CA

Booth & Olson Constr. Co., 529 Insurance Exchange Bldg., Sioux City, Iowa. CA $264,815 (4 bidders) street imprvs., COUNCIL BLUFFS, IOWA. City, City Hall, Council Bluffs, Iowa. Bids Apr. 22 CD 4/1.

Utility Contractors, Inc., 610 N. Main St., Wichita, Kan. CA $247,542. (7 bidders) (A) interceptor sewers, ARKANSAS CITY, KAN. City, James F. Clough, clk., Arkansas City, Kan. Bids Apr. 9. CD 3/18;
Wea Constr. Co., Paola, Kan. CA $596,000 (9 bidders) (B) sewage disposal plant, auxiliaries and appurtenances, (Arkansas City, Kan.).

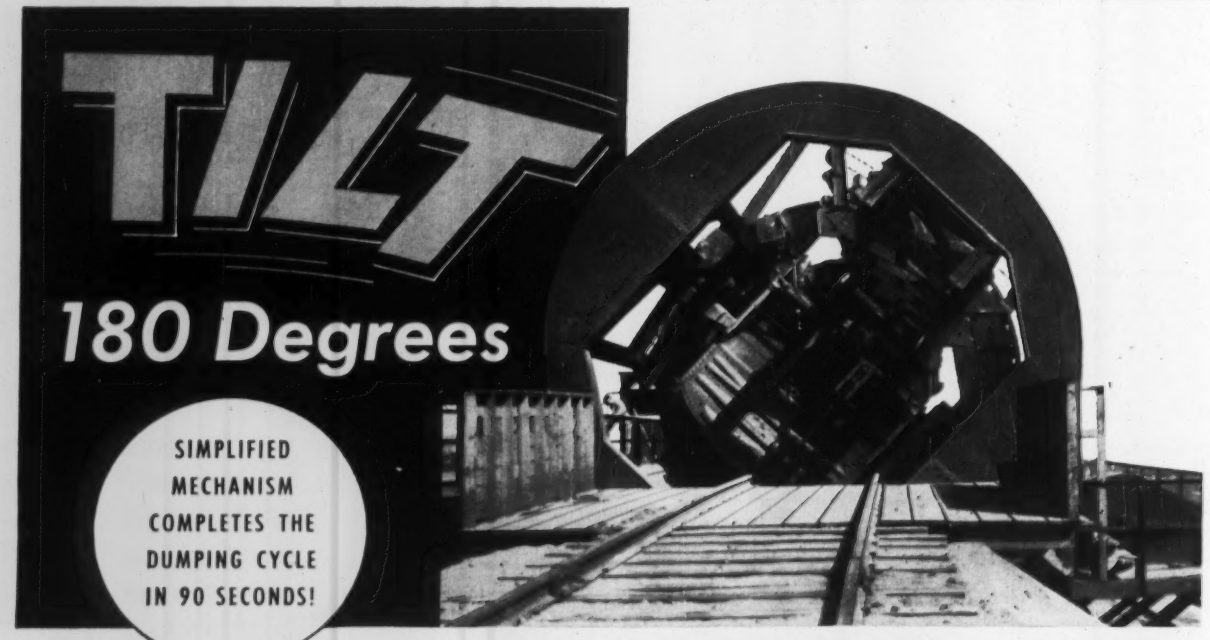
‡ **Vesey-Kingman, Inc.**, 410 Central Bldg., Topeka, Kan. LB $433,940. recreation gymnasium, utilities, Forbes Air Force Base, ENG-23-028-57-71, TOPEKA, KAN. U. S. Eng., Federal Office Bldg., Kansas City, Mo. Bids Apr. 5. CD 3/27.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Banta Constr. Co., 410 E. Hackberry St., Enid, Okla. CA $219,786, est. $137,420. 3 concrete, steel bridges on West Cache Creek on Hy. 35-A near Cookietown, Cotton Co. Bids Apr. 23, awarded Apr. 24. CD 4/11.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,
Okla.—**Ryan & Phelps**, 7512 N. Western St., Oklahoma City Okla. CA $98,850, est. $113,249. base with bit. 4.002 mi. Hy. 34, Harper Co.; CA $116,430, est. $108,737 asph. stab. base with bit. 4.901 mi. Hy. 34 Harper Co.;
Okla.—**Pool Constr. Co.**, Box 540, Shawnee, Okla. CA $150,614, est. $159,068, asph. stab. base with bit. 5.492 mi. Hy. 6, Beckham Co.; CA $254,134, est. $267,360, stab. aggreg. base with bit. 7.974 mi. Hy. 54, Wichita Co.;
Okla.—**Park-Ward Co.**, Commerce Exchange Bldg., Oklahoma City, Okla. CA $180,648, est. $197,502, asph. stab. base with bit. 6.071 mi. Hy. 114, Cimmarron Co.; CA $177,707, est. 185,990, asph. stab. base and bit. 4.971 mi. Hy. 114, Cimmarron Co.;

(Continued on page 122)



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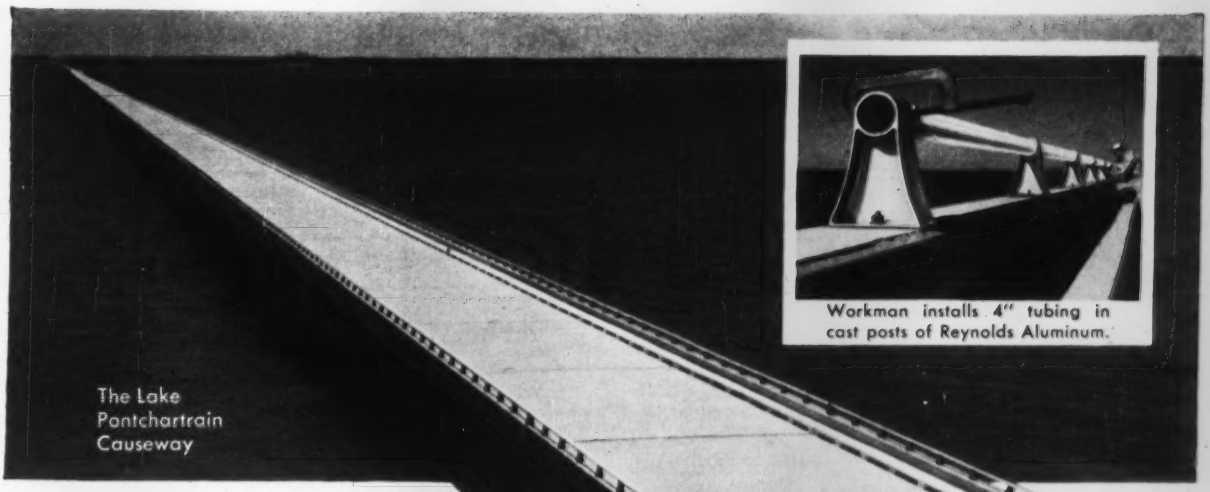

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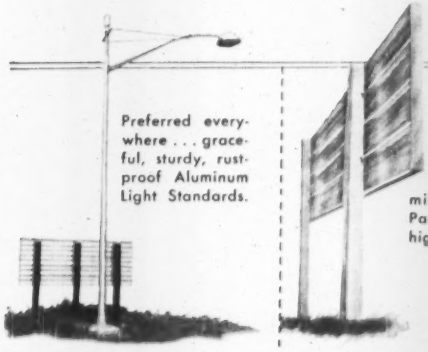

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(Continued from page 120)

Okla.—**Frix & Foster**, 1200 S. Cherokee St., Muskogee, Okla. CA **$155,028**, est. $174,662, grading, draining 7.923 mi. State Hy. 105, Lincoln Co.;

Okla.—**Palleson Constr. Co.**, 2808 W. 18 St., Oklahoma City 7, Okla. CA **$90,552**, est. $110,893. grading, draining, 3 bridges 6.485 mi. Hy. 15, Beaver Co.;

Okla.—**Haskell Lemon**, 3014 N. W. 49 St., Oklahoma City, Okla. CA **$238,611**, est. $227,360, stab. aggreg. base with bit. 5.938 mi. Hy. 47 Custer Co.;

Okla.—**Ottinger Constr. Co.**, 6100 Camp Bowie St., Fort Worth, Tex. CA **$90,703**, est. $86,002. c.conc. 0.318 mi. Hy. 76 Carter Co.;

Okla.—**Jim O'Neal Constr. Co.**, RFD 1, Shawnee, Okla. CA **$74,391**, est. $85,454. grading, draining 3.542 mi. Hy. 27, Okfuskee Co.;

Okla.—**Anderson Constr. Co.**, McAlester, Okla. CA **$244,707**, est. $242,238. aggreg. base and bit. 5.549 mi. Hy. 31, Haskell Co.;

Okla.—**Smith Bros.**, Noble, Okla. CA **$73,941**, est. $73,976. grading, draining 4.976 mi. Hy. 70-E, Bryan Co.;

Okla.—**Broce Constr. Co.**, Woodward, Okla. CA **$86,086**, est. $88,044. stab. grav. base and bit. 5.988 mi. county road, Jackson Co.

Okla.—**Brooks & McConnell**, 5200 N. W. 16 St., Oklahoma City 6, Okla. CA **$168,552**, est. $205,849. 4-lane c.conc. 0.703 mi. Oklahoma Co.; CA **$573,924**, est. $707,847, 4-lane c.conc. 3.278 mi. U. S. 66 Canadian Co.;

Okla.—**Lyles & Buckner**, Commercial National Bldg., Muskogee, Okla. CA **$843,647**, est. $824,292. c.conc. 2.499 mi. U. S. 66, Rogers Co. Bids Apr. 23, awarded Apr. 24. Grand total, $3,618,526. CD 4/11.

Vaughn & Taylor Constr. Co., 1707 E. 6 St., Tulsa, Okla., CA **$660,000**. 60 mi. 4- to 12-in. natural gas pipe line units in Eureka fields, OKLAHOMA. Cities Service Gas Co., 1707 E. 6 St., Tulsa, Okla. CD 12/12.

▲† **Worth Constr. Co.**, Box 531, Fort Worth, Tex., CA **$1,308,355**, est. $1,250,000 runways and taxiways Davis Field ENG-34-066-57-43, MUSKOGEE, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Apr. 3, awarded Apr. 4. CD 4/10, under LB.

† **H. B. Zachry Co.**, P. O. Box 10188, Austin, Tex., CA **$613,444**. officers open mess and pool, ENG-41-443-57-15, FORT HOOD, TEX. U. S. Eng., 100 West Vickery St., Fort Worth, Tex. Bids Apr. 9, awarded Apr. 22. CD 4/16, under LB.

† **Officer in Charge of Constr., Naval Air Advanced Training Command**, Naval Air Station, Corpus Christi, Tex., rejected bids Mar. 12, subsistence bldg., Naval Auxiliary Air Station, Cont. NBy 6334. **(Correction**—status). KINGSVILLE, TEX. CD 3/25, under CA.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Hoyle & Elbert Lowdermilk, 1950 W. Dartmouth St., Englewood, Colo., CA **$919,271**, est. $1,002,000 grading, structures, sub-base material 8.608 mi. Conifer and Bailey, Colo. Proj. F 016-1 (5), Jefferson and Park Counties. Bids Apr. 26. CD 4/17.

† **B. H. Baker, Inc.**, Box 173, Colorado Springs, Colo., CA **$784,577**, three 3 story, 58x86 ft., concrete frame, support personnel Dormitories, Air Force Academy, COLORADO SPRINGS, COLO. Dpt. Air Force, P. O. Box 1670, Colorado Springs, Colo. Bids Apr. 18, awarded Apr. 24. CD 4/26, under LB.

▲† **Elliott Co.**, Ridgeway, Pa., CA $1,826,421. two 40,000 kw generators for second power plant for Fort Peck Dam and Reservoir Project, Inv. 32-015-57-28, MONTANA. U. S. Eng., Riverdale, N. D. Bids Feb. 12. CD 2/19, under LB.

BUILDINGS—LB & CA

A. H. Haeseler Bldg. & Contg. Co., 2346 Palm St., St. Louis, Mo. CA Est. **$350,000**. SUPERMARKET, with dock facilities, ST. LOUIS, MO. Fred P. Rapp Supermarket, Inc., (Div. A. C. F. Wrighey Stores, Inc.), c/o Russell Mullgardt, Schwarz, Van Hoefen, archts., Chemical Bldg., 721 Olive St., St. Louis 1, Mo. Bids Mar. 20. CD 3/19.

Hubatchek Constr. Co., John Hubatchek, pres., 6819 Gravois Ave., St. Louis 9, Mo. Owner Builds **$700,000**. 70 one story, brick, concrete, RESIDENCES in Southview Gardens subdivision on Buckley Rd. south of Lemay Ferry Rd., ST. LOUIS COUNTY, MO.

David Real Estate Co., Inc., 418 W. Main St., Blytheville, Ark., Owner Builds. Est. **$400,000**. development of 206-lot SUBDIVISION, incl. bldgs., streets, etc., BLYTHEVILLE, ARK.

B. Sweetser Co., Elkins, Ark., LB **$618,777**. constr. five 2 story concrete block APARTMENTS for married students, University of Arkansas, FAYETTEVILLE, ARK. University of Arkansas Bd. Trustees, T. C. Carlson, secy-treas., Fayetteville, Ark. Edward D. Stone, Fayetteville, Ark., archt. Bids Apr. 16, CD 3/25.

W. Butler Constr. Co., Minnesota Bldg., St. Paul, Minn., CA **$360,000**. constr. 1 story, 60,000 sq. ft. floor space OFFICE AND WAREHOUSE BLDG., RAPID CITY, S. D. Nash-Finch Co., 3115 W. Lake St., Minneapolis, Minn. CD 3/25.

▲ **Peter Kiewit Sons Co.**, Omaha National Bank Bldg., Omaha; Neb. CA 15 story home OFFICE addn., OMAHA, NEB. Total est. cost **$4,000,000**. Northern Natural Gas Co., 2223 Dodge St., Omaha, Neb. John Latenser & Sons, 1307 Farnam St., Omaha, Neb., archts. CD 3/15;

Natkin & Co., 4101 Leavenworth St., Omaha, Neb. CA mechanical work (Omaha, Neb.).

Industrial Electrical Works, 1509 Chicago St., Omaha, Neb. CA electrical work. (Omaha, Neb.).

Hilloday Homes, Inc., 8940 Mt. Delano Dr., El Paso, Tex. Owner Builds. **$520,000**. 52 DWELLINGS, EL PASO, TEX. CD 4/15.

▲ **Dow Chemical Co.**, Freeport, Tex., Owner Builds. **$9,000,000**. constr. 2nd synthetic glycerine mfg. PLANT at Plant "B" site, FREEPORT, TEX. H. Senturia Eng., c/o owners, consultants. CD 3/12/56.

Albert L. Krull, Builder, 3434 Arbor St., Houston, Tex., Owner Builds. **$355,000**. 36 DWELLINGS, HOUSTON, TEX. CD 2/28.

C. B. Lauch Constr. Co., 20 3rd St. N., Great Falls, Mont., LB **$992,722** general constr. RECEIVING and INTENSIVE TREATMENT BLDG. at State Mental Hospital, WARM SPRINGS, MONT. Montana Bd. Examiners, Helena, Mont. Bids Apr. 25. CD 3/25.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **California**—BA 5/24—U. S. Eng., 1209 8th St., Sacramento, constr. main dam, bldgs. and appurtenances for Success Dam, Tule River, earth and rockfill dam and earthfill dike, dam 140 ft. high and 3,500 ft. long at crest, 1,350,000 cu. yd. unclass. excav., 6,050,000 cu. yd. excav. from borrow, 1,097,000 cu. yd. impervious compacted fill, 3,856,000 cu. yd. pervious compacted fill, ENG-04-167-57-83. $8,000,000-$10,000,000. Extended date. CD 3/20.

▲† **Guam, Marianas Islands**—HANGAR—BA 6/7—Bureau Yards & Docks, c/o Res. Officer in Charge of Constr. 333 Fell St., San Francisco, Calif., U. S. A., Naval Air Station Hangar, NBy 3344, $1,600,000. Plans deposit $50. CD 4/10, under LB.

▲† **Guam, Marianas Islands** — HEADQUARTERS — BA 6/11—Bureau Yards & Docks, c/o Res. Officer in Charge of Constr., 333 Fell St., San Francisco, Calif., U. S. A., naval headquarters bldg., NBy 3313, $1,400,000. Plans deposit $50. CD 4/10, under LB.

BUILDINGS—BA

† **Utah, Ogden**—AIR STORAGE VESSELS—BA 5/20—Marquardt Aircraft Co., 16555 Saticoy St., Van Nuys, Calif., furnishing air storage vessels to store air at high pressures 800 P S I G or 2200 P S I G for use in test cells total storage volume required in 26,800 cu. ft. and 6,830 cu. ft. at respective pressures for Dpt. Air Force. Plans deposit $25. CD 2/9/56, under Industrial Buildings.

▲† **Idaho, Arco** — TEST — BA 5/22 — Atomic Energy Comn., Idaho Operations Office, Idaho Falls, 2 story, rein.-con. test bldg., control and equipment bldg. and other structures and utilities for test facility, National Reactor Testing Station, AT (10-1)-878. $6,500,000 CD 12/21.

† **Utah, Salt Lake City**—ARMORY—BA 5/22—Utah National Guard, Adj. Gen. Maxwell E. Rich, Fort Douglas, Utah, national guard armory. $350,000. Ashton, Evans & Brazier, 24 S.W. Temple St., archts. CD 4/22.

▲ **Wash., Bellingham**—HOSPITAL—BA 5/22—St. Luke's Hospital, 1210 Jersey St., 3 story, bsmnt., rein.-con. hospital addn. $1,300,000. Plans deposit $50. Naramore, Bain, Brady & Johanson, 904 Seventh Ave., Seattle, archts. CD 7/15/55.

▲ **Calif., Fresno**—HOSPITAL—BA 6/4—Fresno Co. General Hospital, c/o Bd. Supervs., County Clerk, Court House, 6 story, ground floor, type I constr. reinf. con. hospital at Cedar Ave. near Huntington. $5,000,000. Extended date. Horn & Mortland, 2016 Merced St., archts. CD 4/17.

BUILDINGS—SLC

▲ **Calif., Fresno** — HOSPITAL — Sierra Hospital Bldg. Headquarters, c/o 853 Van Ness St., soon lets contract 2 story, Type I constr. hospital. $1,000,000. Maurice J. Metz, 701 Helm Bldg., archt. CD 12/28.

HEAVY CONSTRUCTION—LB & CA

R. C. Bradshaw Construction, 4610 Atwood Blvd., Murray, Utah, CA **$251,968**, curbs, gutters and sidewalks in area of 17 St. South and 21 St. South and 16 and 17 Sts. East, SALT LAKE CITY, UTAH. Salt Lake City Comrs., Roy. W. McLeese, engr., City-County Bldg., Salt Lake City, Utah. Bids Apr. 17. CD 3/22.

▲† **Merritt-Chapman & Scott Corp.**, 261 Madison Ave., New York, N. Y., CA **$107,955,122**, est. $135,608,170 Glen Canyon Dam and Power House, Colorado River Storage Proj., Spec. 4825, ARIZONA, NEVADA AND UTAH. Bureau Reclamation, Dpt. Interior, Kanab, Utah. Bids Apr. 11. CD 4/15 under LB.

▲† **Cherf Brothers Inc., Sandkay Contractors Inc.** and S. Birch & Sons, Ephrata, Wash., LB **$1,636,739**, est. $1,267,685 earthwork, concrete canal lining and structures for Howard Prairie delivery canal, Station 0 plus 09 to 539 plus 00 and Soda Creek diversion dam and feeder canal Rogue River Basin Proj., Spec. DC 4877, OREGON. Bureau Reclamation, Dpt. Interior, Camp White, Ore. Bids Apr. 25. CD 3/20.

▲ **CALIFORNIA**—State Dpt. P. Wks., 1120 N. St., Sacramento,

Griffith Co., 1060 S. Broadway, Los Angeles, Calif., CA **$1,695,513**; grading, paving 0.8 mi. 6 and 8 lane divided freeway and constr. interchange structures at Fairmount Ave. on U. S. 80 in San Diego, San Diego Co. CD 4/15, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Harms Bros., C. M. Syar and Erickson Phillips & Weisburg, 5261 Stockton Blvd., Sacramento, Calif., joint venture, CA **$4,118,053**. (6 bidders) grading, surfacing 3.5 mi. six lane divided freeway on U. S. 40 between 0.2 mi. North Vallejo Way and 0.4 mi. north Redwood St. in Vallejo to provide an expanded approach to Carquinez Bridge and constr. 7 concrete bridges, the present 4 lane hy. will be widened to provide two 36 ft. traveled ways, Solano Co. Bids Apr. 17, awarded Apr. 23. CD 4/22, under LB.

▲† **A. Teichert & Son**, 1931 Stockton Blvd., Sacramento, Calif., LB **$1,696,861**, est. **$1,891,642**. (6 bidders) two pumping plants and levee constr. on American River, near Sacramento, ENG-04-167-57-96, CALIFORNIA. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Apr. 25, CD 3/20.

Robert W. Hongola, 405 Deodar St., Ontario, Calif., CA **$257,024** (12 bidders) arterial water distr. system, Unit. A, INDIO, CALIF. City Council, City Hall, Indio, Calif. Boyle Eng. Co., 3913 Ohio St., San Diego, Calif., engrs. Bids Apr. 17. CD 4/8.

▲ **Guy F. Atkinson Co.**, P. O. Box 259, Long Beach, Calif., LB **$2,048,700**. rein.-con. conduit for Dominguez Channel from Denker to Vermont Ave., LOS ANGELES, CALIF. Los Angeles Co. Flood Control Dist., 12250 Alcazar St., Los Angeles, Calif. Bids Apr. 26, CD 4/2.

▲† **Gordon H. Ball & Cordon H. Ball, Inc.**, 300 Camille Ave., Danville, Calif. CA **$1,985,079**; runway, misc. facilities, McClellan Air Force Base, Spec. 2016, ENG-57-41, SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. CD 4/4, under LB.

▲ **N. P. Valkenburgh**, 1627 N. Chico St., El Monte, Calif. CA **$1,365,320**. constr. Switzer Creek Storm Drain from Balboa Park to San Diego Bay, SAN DIEGO, CALIF. City Civic Center, 1600 Pacific Hy., San Diego, Calif., Bid Apr. 10, CD 4/15, under LB.

BUILDINGS—LB & CA

▲ **Procon, Inc.**, 1111 Mt. Prospect St., Des Plaines, Ill. CA Est. **$3,000,000**. design and construct catalytic REFORMING UNIT at Woods Cross Plant, WOODS CROSS, UTAH. Phillips Petroleum Co., Paul Endacott, Pres., Bartlesville, Okla.

T. G. K. Constr. Co., 2750 W. McDowell St., Phoenix, Ariz., CA **$500,000**. 5-level PARKING GARAGE, with service station Madison and First Ave., PHOENIX, ARIZ. Luhrs Business Enterprises, c/o contractor. Awarded Apr. 19.

Hebb & Narodick Constr. Co., 232 4 Ave. N. Seattle, Wash., CA Est. **$500,000**. BOWLING FACILITY for recreation center, BELLEVUE, WASH. Sterling Theaters, Palomar Bldg., Seattle 1, Wash. CD 11/30.

▲ **F. Dunham**, 122 Vista Way, Kenewick, Wash., Day Labor, **$2,000,000**. 200 HOUSES, KENNEWICK, WASH.

W. M. Yeaman, 601 S. 1 St., Yakima, Wash., CA **$200,672** MAINTENANCE BLDG., YAKIMA, WASH. Yakima Co., County Court House, Yakima, Wash. CD 11/8.

Juhr & Sons, 1339 S. E. Gideon St., Portland, Ore., CA **$982,000** (4 bidders) JUNIOR HIGH SCHOOL, PARKROSE, ORE. Multnomah School Dist. No. 3, 19613 N. E. Prescott St., Parkrose, Ore. Bids Apr. 23. CD 4/10.

▲ **B. L. Metcalf General Contractor, Inc.**, 1515 W. Chapman St., Orange, Calif., CA **$1,779,000**. EXCELSIOR HIGH SCHOOL, Increment No. 2, ARTESIA, CALIF. Excelsior Union High School Dist., 17923 S. Pioneer Blvd., Artesia, Calif. CD 3/11, under LB.

▲ **U. S. Eng.**, 751 S. Figueroa St., Los Angeles, Calif., cancelled bids to have opened Apr. 24, BLDG. REHABILITATION, at Camp Cooke, ENG-04-353-57-84, LOMPOC, CALIF. Est. **$2,000,000**. CD 4/2.

▲ **Merco Constr. Engineers, Inc.**, 6052 Venice Blvd., Los Angeles, Calif., LB **$3,372,000**. (6 bidders) constr. Monroe HIGH SCHOOL, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Apr. 26. CD 4/8.

▲ **Nonellini Constr. Co.**, P. O. Box 1528, Stockton, Calif., CA **$2,639,000** (combined bid) (A) low rent housing, 300 units at Stockton, Spec. Cal. 24-4. (B) low rent housing, 40 units at Thornton,, STOCKTON, CALIF. San Joaquin Co. Housing Auth., 2436 Belleview St., Stockton, Calif., Howard G. Bissell & E. Eckland, 41 N. Hunter St., Stockton, Calif., archts. CD 12/12.

Los Angeles Cork Co., 4180 E. Washington Blvd., Los Angeles, Calif., CA **$153,000**. 89x168 ft. concrete COLD STORAGE PLANT addn., VERNON, CALIF. Pacific Cold Storage Co., 2851 44th St., Vernon, Calif.

CANADA

BUILDINGS—BA

Ont., **Toronto**—HOME FOR ELDERLY—BA 5/13—Municipality of Metropolitan Toronto, 67 Adelaide St. E., eight 60x172 ft. HOMES for elderly persons, 125-acre site Bathurst St. and Lawrence Ave. E. $700,000. Plans deposit $100. Jackson, Ypes & Assocs., 24 Northtown Shopping Plaza, 5385 Yonge St., engrs.-archts. Flanagan & Black, 3086 Bloor St. W., consult. mech. engrs. CD 10/11.

▲ **Ont., Toronto**—UNDERGROUND GARAGE—BA 5/22—City, City Hall, and Parking Auth. Toronto, 414 Bay St. underground garage of three sub-levels with rein.-con. flat slab constr., incl. 413,400 sq. ft. parking area under Civic Square, $3,600,000. Plans deposit $100. H. K. Ferguson Co. of Canada, Ltd., 20 College St., Toronto, engrs. CD 3/11.

HEAVY CONSTRUCTION—LB & CA

Diamond Constr. Co., 480 Union St., Fredericton, N. B. CA About **$650,000**. streets, parking area, storm and sanitary sewage collection sys., water distr. sys. for Town Centre and Residential District "D", Neighborhood No. 1, OROMOCTO, N. B. Town of Oromocto, Oromocto, N. B. Awarded Apr. 22.

BUILDINGS—LB & CA

▲ **Fraser-Brace Eng Co. Ltd.**, 360 St. James St. W., Montreal, Que., CA Est. **$3,000,000**. sulphuric acid PLANT, adjoining International Nickel Co. iron plant west of COPPER CLIFF, ONT. Canadian Industries

(Continued on page 124)

(ADVERTISEMENT)

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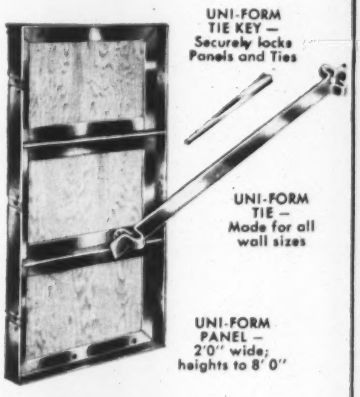
3 SIMPLE ELEMENTS FORM ANY CONCRETE STRUCTURE



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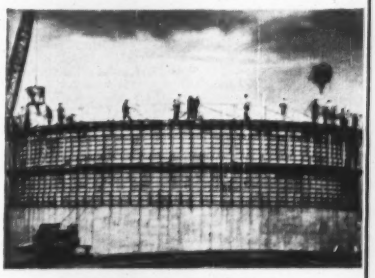

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UNI-FORMS provide faster, simpler and easier circular wall forming . . . one side alignment and bracing . . . absolute control of concrete, and safer, cleaner working areas.

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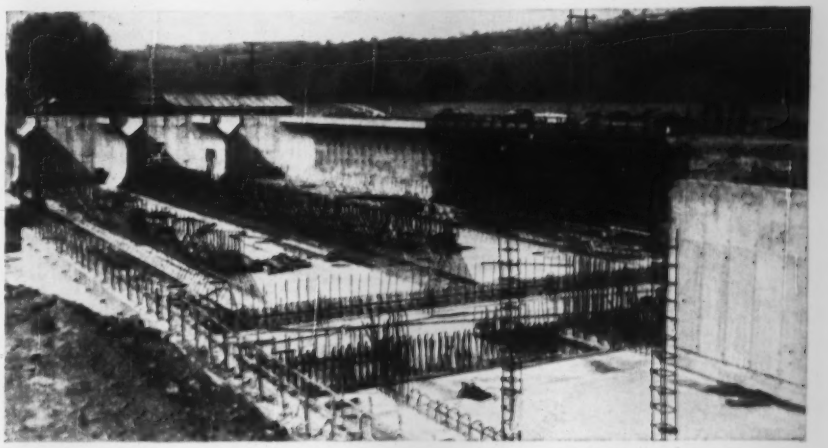
Unique Prefab Form System Speeds Sewage Plant "Y" Wall Construction



MECHANIZED FORMING with new "Y" wall trusses and UNI-FORM Panels speeds construction, saves labor and material

Field reports on a new system for forming "Y" walls in aeration tanks and settling basins indicate very satisfactory operation and important labor and material saving advantages for the system.

Developed by the Universal Form Clamp Co., Chicago, the new system is said to completely eliminate the many problems and difficulties encountered by contractors in forming this special type of wall in sewage disposal plant construction.

Specially designed trusses, which can be made to handle any type, height, shape or wall thickness, are used in conjunction with standard UNI-FORM Concrete Forms to form the "Y" wall. Assembly of the truss and UNI-FORM Panels into a complete form, ready to receive concrete is a fast, mechanical operation. Positive internal spreading and accurate wall thicknesses are assured by the use of Universal Spiroloc Cone Nut Assemblies.

Features incorporated in the design and operation of the Universal "Y" wall forming system eliminate the necessity of additional lumber or tying devices for the alignment and bracing of the unit.

STRIPPED WALLS are clean and accurate

Erection, stripping and movement of the form can be handled either as individual pieces or as a large unit. Both methods have been very successfully used on recent projects.

Because standard UNI-FORM panels are used to form a large percentage of the "Y" wall contact area, it is possible to strip all UNI-FORM panels within a very short time after the actual pouring of concrete, leaving the trusses in place to provide the necessary support for the required period of time.

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ASSEMBLED SECTION of "Y" wall truss with UNI-FORM Panels

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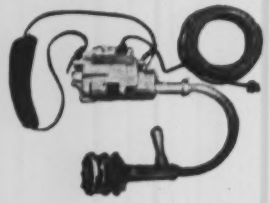
"BERG"

CONCRETE SURFACER MODEL A



"Berg" equipment is used extensively for surfacing and finishing applications on concrete construction.

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The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

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THE CONCRETE SURFACING MACHINERY CO.

4667 SPRING GROVE AVE.

CINCINNATI 32, OHIO

(Continued from page 122)

Ltd., 1253 McGill College Ave., Montreal, Que. Awarded Apr. 18.

W. R. Bourne, 70 Queen Mary Rd., Ottawa, Ont., CA $505,000 (4 bidders) D. Roy Kennedy SCHOOL exten. Woodroffe Ave., OTTAWA, ONT. City of Ottawa Public School Bd., 330 Gilmour St., Ottawa, Ont. Bids Apr. 16, awarded Apr. 18. CD 4/2.

W. J. Lee Constr. Ltd., 1154 Garden Rd., Lorne Park, Toronto, Ont., CA Est. $750,000 (6 bidders) 2 story, rein.-con. frame Secondary SCHOOL Lorne Park Rd., PORT CREDIT, ONT. South Peel Bd. Educ., Port Credit High School Port Credit, Ont. Bids Apr. 2, awarded Apr. 22. CD 3/18.

▲ **H. D. Payne & Sons Ltd.**, 1412 Kennedy Rd., Toronto, Ont. Est. $4,500,000. design and construct SHOPPING CENTER and HOUSING DEVELOPMENT (Markham) TORONTO, ONT. Armleigh Heights Developments, Unionville, Ont. Awarded Apr. 22.

Alain Constr., Inc., 5 Church St., Dorval, Que., Owner Builds $970,000. 35 unit HOUSING, Beaconsfield Blvd., BEACONSFIELD, QUE. Emilien Bujold, 6746 Molson St., Montreal, Que., archt.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲† **Burgess Constr. Co.**, Fairbanks, Alaska, CA $1,108,432, 53x57 ft. transmitter bldg. 12x16 ft., engine-generator bldg., 2-bedroom quarters bldg., etc. for Communication Station, Inv. 57-80, YAKATAGA, ALASKA. Civil Aeronautics Admin., Federal Bldg., Anchorage, Alaska. Bids Mar. 25. CD 3/29, undre LB.

BUILDINGS--LB & CA

▲ **Sitka Mill Builders** (Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif., and Howard S. Wright & Co., Inc., 414 Pontius St., Seattle, Wash.) (joint venture) CA $55,000,000 PULP MILL, SITKA, ALASKA. Alaska Lumber & Pulp Co., Sitka, Alaska. CD 2/2/55.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Calif., Benicia**—City, c/o Clerk, City Hall, Benecia, defeated $1,200,000. bonds Apr. 2, WW. CD 2/28.

▲ **Calif., Sanger**—City, City Hall, water sys. $600,312. Wilsey & Ham, 111 Rollins Rd., Millbrae, consult. engrs.

▲ **Mo., St. Louis**—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., Zone 3, constr. 15 mi. pressure water conduits from new distributive pumping station at Chain of Rock Plant on Mississippi River to Baden and Bissell Point areas to connect with existing lines of St. Louis Water Division, $10,000,000. Bids in July or August; constr. 12 mi. 36- to 72-in. water mains from Baden Station of St. Louis Water Division to point near Delor St. mainly along Spring Ave., $15,000,000. Bids probably in 1959.

constr. clear water basin adjacent to new distributive pumping station at Chain of Rocks Plant on Mississippi River for St. Louis Water Division, $1,500,000. CD 10/21/53.

O., Akron—Comrs. Summit Co., Court House, water sys. 1 m.g.p.d. wells, 500,000 gal. standpipe with 10 and 12 in. lines to serve Northfield, Macedonia, and Northfield Center Twp., $980,000. Weinberg & Cunningham, 405 Portage Trail, consult. engrs. Leslie G. Wolfe, co. engr. CD 1/25.

SEWERS, WASTE DISPOSAL

▲ **Calif., Jurupa**—Jurupa Community Services Dist., sewage disposal facilities, trickle-filter treatment plant, 1 mg daily capacity, pumping plant, sewerage mains, etc. $1,500,000. Bulot & Quigley, Engineers, 1323 N. Broadway, Santa Ana, consult. engrs.

N. J., Asbury Park—City, reconstr. trunk sewer and connections. $615,690. Fridy, Gauker, Truscott & Fridy, Towne Bldg., 1321 Arch St., Phila., Pa., engrs. CD 4/11.

BRIDGES

▲ **Mo., St. Louis**—City, Frank J. McDevitt, pres. Bd. Pub. Service, 304 City Hall, 12 Blvd. and Market St., Zone 3, imprvs., etc. to Douglas MacArthur Bridge across Mississippi between St. Louis and East St. Louis, Ill., incl. (A) renewal hy. deck, (B) extension western approach over Seventh St., St. Louis, $1,735,000. C. E. Smith & Co., 1602 Locust St., Zone 3, consult. engrs. CD 6/7/55.

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond,

Albemarle Co.—ease curves and widening bridges Route 20, Route 250 toward Barboursville $50,000.

Allegheny Co.—2 bridges over Potts Creek, Route 18, $75,000.

Charles City and Prince George Counties—bridge over James River near Hopewell, Route 36, $250,000.

Chesterfield co. and City of Petersburg—bridge, approaches Appomattox River, Route 36, $125,000.

Chesterfield Co.—reconstr. incl overpass Seaboard Air Line R.R., Route 10, Route 1-East. $200,000.

Craig Co.—bridges, approaches Route 311, Potts Creek at Paint Bank, $60,000.

Dickenson Co.—rebuilding bridge over Russell fork south of Haysi, Route 80, $85,000.

Fairfax and Prince William Counties—repairing pier Route 1, Occoquan Creek Bridge, $90,000.

Fairfax Co.—bridge over Holmes Run, Route 244, $60,000.

Halifax Co.—overpass, approaches Atlantic and Danville Railroad at Virgilina, Route 49 and 96, $72,000.

Henry Co.—bridge over Smith River, Route 220 and 58, $300,000.

Isle of Wight Co.—raising approaches to Cypress Creek Bridge, Routes 10 and 258, $10,000.

Mecklenberg Co.—underpass and approaches Atlantic and Danville Railroad at Boydton, Route 58, $200,000.

Middlesex Co.—bridge over Urbanna Creek, Route 227, $95,000.

Norfolk Co.—bridge over Southern Branch of Elizabeth River, Route 166, $300,000.

Page Co.—bridges over Dry Run and Pass Run Route 211, $80,700.

Princess Anne Co.—bridge over Lynhaven Inlet, Route 60, $500,000.

Rockbridge Co.—bridge over Hays Creek North of Brownsburg, Route 252, $100,000.

Rockingham Co.—sidewalk on bridge over Elks Run, Route 340, Town of Elkton, $5,000.

Southampton Co.—bridges, approaches Nottoway River, Route 258, $250,000.

Surry and Essex Counties—bridge, approaches Blackwater River, Route 31, $100,000.

Washington Co.—Norfolk and Western Railway overpass at Glade Springs and new connection to Route 11, Route 91, $311,354.

STREETS AND ROADS

Minn., Minneapolis—City, H. Erickson, engr., widen, resurf. Central Ave. from Mississippi River to 18 Ave. Northeast, $369,000, Constr. in June; widen, repave Washington Ave. north from west Broadway to 26 Ave. North and repave from 26 Ave. North to Lowry Ave., $347,000, Constr. in April, G. E. Bodien, asst. engr. in charge of paving.

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond,

Albermarle Co.—imprvs. in grounds of University of Virginia, Route 302, $20,000.

imprv. Route 29, north of Charlottesville-north, $91,186.

Imprv. Route 29, south of Charlottesville-south, $57,751.

extending Charlottesville By-Pass, Route 250, Route 29, Route 250. $500,000.

Alleghany Co.—imprv. Route 60 (Int. 403) West Clifton Forge-west, $1,836,055.

b. conc. surf. Route 220, Covington-north, $50,000.

Arlington Co.—reconstr. Route 244, South Route 120-(Glebe Road) South, $70,000.

correct drainage Route 237, at N. Aberdeen St. $18,000.

Augusta Co.—b. conc. surf. Route 340, South of Grottoes-South, $50,000.

Bath Co.—reconstr. Route 35, foot of Warm Springs Mountain-East, $200,000.

Bedford Co.—widening, easing curves Route 43, North Bedford-North, $75,000.

reconstr. gap Route 460, West Elk Creek-West, $300,000.

imprv. sections Route 501 between Lynchburg and Big Island, $100,000.

dual-laning Route 460, West Bedford-west, $330,000.

Bland Co.—reconstr. Route 21, North Side Brushy Mountain, $200,000.

Botecourt Co.—b. conc. surf. Route 550, Eagle Rock-South, $70,000.

Brunswick Co.—imprv. Route 46, Route 1, towards Lawrenceville, $25,000.

Imprv. Route 58, Lawrenceville By-Pass, $100,000.

Buchanan Co.—b. conc. surf. Route 460, Grundy-Kentucky State Line, $100,000.

curb, gutter and sidewalk, Route 460, Town of Grundy. $350,000.

Buckingham Co.—reconstr. Route 15, Sprouses Corner-Sheppards, $150,494.

Campbell Co.—curb, gutter, sidewalk and street wid'n. Route 43, Town of Altavista, $70,000.

dual lane Route 297, West Lynchburg-West, $450,000.

imprv. Route 43, Bedford County Line-East, $75,000.

imprv. rural section of Lynchburg Distribution Road, Route 29A, S. C. Lynchburg-Route 29, $300,000.

Caroline Co.—extending curbs and gutter to E.G.L. Route 301, Town of Bowling Green, $5,000.

Carroll Co.—reconstr. Fancy-Gap-South, Route 52, $281,000.

curb, gutter and sidewalk Route 52 from Route 58-South, Town of Hillsville, $45,000.

imprv. Route 52, south of Hillsville-south, $27,248.

Charles City Co.—reconstr. Route 5, Charles City Court House-East, $90,000.

Charlotte Co.—reconstr. Route 15, between Barnes Junction and Mecklenburg Co. Line, $100,000.

reconstr. Route 47, between Drakes Branch and Route 360, $75,000.

curb, gutter Route 47 south of Route 40, Charlotte Court House, $50,000.

Chesterfield Co.—dual lane, Route 60, West Richmond-West, $272,000.

dual lane Route 360, West Richmond-West, $300,000.

Clarke Co.—imprv. Route 340, between Double Toll Gate and Waterloo, Route 501, $105,600.

reconstr. Route 50 and 17 Ashby Gap-West, $100,000.

curbs, gutters and widening Route 340, Town of Berryville, $80,000.

Culpepper Co.—reconstr. Routes 15 and 29, Brandy-North and South, $150,000.

Dickenson Co.—imprv. Route 80, between Kentucky State Line and Route 83, $60,000.

Dinwiddie Co.—reconstr. Route 460, West Ford-West, $150,000.

reconditioning Route 40, McKenney-East, $40,000.

b. conc. surf. Route 1, North McKenney-North, $75,000.

Essex Co.—imprv. Route 17, raising fill at Mt. Landing Creek and Brockenboroughs Gut, $31,000.

b. conc. surf. Route 17, Tappahannock-North, $50,000.

dual lanes Route 17 and 360, Brays Fork-North, $250,000.

Fairfax Co.—imprv. Route 123, Town of Vienna, $50,000.
dual lane Route 236, West Annandale-West, $300,000.
dual lane Route 123, Langley-East, $160,000.
Fairfax and Prince William Counties—imprv. Route 39 (Int. 405 and Route 211), between Centreville and Gainsville, $2,217,419.
Fauquier Co.—imprv. Route 55 (Int. 405) and Route 17, West Marshall-West, $1,500,000.
imprv. Route 17, Delaplane-North, $230,000.
Floyd Co.—curb, gutter and wid'n. Route 221, Town of Floyd, $22,000.
Fluvanna Co.—relocating 2 curves Route 53, near Route 15, $40,000.
reconstr. Route 15 North Dixie-North $100,000.
Franklin Co.—b. conc. surf. Route 220, Boones-Mill South $150,000.
imprv. Route 220, relocation at Rocky Mount $300,000.
Frederick Co.—reconstr. Route 50, West Winchester-West, $500,000.
Giles Co.—curbs, gutter and street wid'n. Route 460 town of Pearisburg, $60,000.
4-lane constr. Route 460, Pearisburg-West $67,000.
reconstr. Route 61, Narrows-West, $100,819.
imprv. Route 460, reconstr. of Gap in Pembroke $100,000.
Gloucester Co.—dual lane Route 17, Gloucester Point-North, $300,000.
reconstr. Route 22, King and Queen Co. Line-Glenns $200,000.
Goochland Co.—b. conc. surf. Route 6, Monanan Hills-Crozier, $50,000.
Grayson Co.—reconstr. Route 58, Independence-East $200,000.
Greenville Co.—imprv. Route 301 (Int. 401) North End Emporia By-Pass and North Carolina State Line, $3,644,011.
Halifax Co.—b. conc. surf. Route 501, Route 58-Route 96, $75,000.
imprv. Route 344, Scottsburg-Route 360, $30,000.
dual lane Roue 58 East Danville-East, $475,000.
Henrico Co.—reconstr. Route 33, Northwest Greendale West Laurel, $265,574.
reconstr. intersection Route 161 and 356 $50,000.
reconstr. Route 250, West Richmond-West, $275,000.
Henry Co.—reconstr. Route 220, between Martinsville and Bassett Fork, $200,000.
reconstr. Route 57, Bassett-West, $100,000.
Isle of Wight Co.—reconstr. Route 528, South Isle of Wight Court House-South, $100,000.
King George Co.—reconstr. Route 3, Stafford Co. Line-East; $200,000.
King William Co.—b. conc. surf. Route 30, West Point-North, $25,000.
reconstr. Route 360, Aylett-West, $300,000.
Lancaster Co.—reconstr. Route 354, Litwalton-South, $100,000.
Lee Co.—relocating sections, Route 58, between Rose Hill and Jonesville, $200,000.
sidewalk, Route 58, E.C.L. of Pennington Gap East and West, $10,000.
Loudoun Co.—reconstr. Route 15, Leesburg-North, $200,000.
Loudoun and Fauquier Counties—reconstr. Route 50, Middleburg-West, $150,000.
Louisa Co.—widening curb and gutter, Route 33 E.C.L. Louisa-East, $30,000.
Matthews Co.—imprv. Route 14 South Matthews Court House-Bayside, $75,000.
Mecklenburg Co.—reconstr. Route 49, South Chase City-South, $200,000.
Montgomery Co.—curb, gutter and sidewalk Route 11, Town of Christiansburg, $6,000.
imprv. grounds Route 314, of Virginia Polytechnic Institute, $50,000.
Nelson Co.—imprv. Route 250 (Int. 404) Augusta Co. Line-Albemarle Co. Line, $39,550.
reconstr. Route 6, North Woods Mill-Martins Store, $225,000.
Norfolk and Princess Anne Counties—frontaage roads Route 13, on Military By-Pass, $50,000.
Northampton Co.—dual lane Route 13, Bayview-South, $250,000.
Northumberland Co.—b. conc. surf. Route 360 E. Heathsville-East, $100,000.
Nottaway Co.—reconstr. Route 49, Intersection Route 360-Intersection Route 460, $200,000.
Orange Co.—reconstr. Route 20, East Orange-East $200,000.
Page Co.—curb, gutter and sidewalk Route 340, Town of Stanley, $20,000.
Patrick Co.—reconstr. Route 58, West Henry Co. Line-West, $300,000.
Pittsylvania Co.—b. conc. surf. Route 58, East Danville-East, $45,000.
reconstr. Route 41, Danville-Northwest, $40,000.
dual lane, Route 58, West Danville-West, $150,000.
reconstr. Route 29, South Gretna-South, $300,000.
Powhatan Co.—relocating two reverse curves Route 522, north of Route 60, $35,000.
Prince Edward Co.—reconstr. Route 360, West Meherrin-West, $475,000.
b. conc. surf. Route 15, Kingsville-South $70,000.
reconstr. Route 109, Route 460-Fort Lee, $50,000.
imprv. Route 301 (Int. 401) Prince George-Petersburgh-South, $4,994,280.
Prince William Co.—reconstr. Route 28, Nokesville North and South, $98,473.
Prince William and Fairfax Counties—imprv. Route 1 (Int. 481) Woodbridge North and South, $2,500,000.
Pulaski Co.—imprv. Route 11 (Int. 402 and Route 100), Wythe Co. line—East $2,737,261.
Rappahannock Co.—constr. climbing lanes, Route 211 Page Co. line—East, $200,000.
Rockbridge Co.—reconstr. Route 60, between Buena Vista and Lexington, $250,000.
reconstr. Route 39, Rockbridge Baths toward Lexington, $100,000.
Rockingham Co.—imprv. Route 259, Broadway Route 11, $100,000.
imprv. Route 11 (Int. 402) Harrisonburg By-Pass $5,000,000.
imprv. Route 76 South Route 33-South $75,000.
Russell Co.—reconstr. Route 64, between St. Paul and Hamlin, $100,000.
reconstr. Route 71, East of Scott Co. Line-East, $200,000.
reconstr. Route 80, Buchanan Co. Line-Honaker $100,000.
reconstr. Route 66, Banners Corner-West, $110,000.
Russell and Tazewell Counties—reconstr. Route 19 and 460, West Tazewell-West, $500,000.
Scott Co.—reconstr. Route 58, Duffield-West $150,000.
Shenandoah Co.—climbing lane on Massanutten Mountain, Route 211, West Page Co. Line-West, $300,000.
reconstr. Route 42, Route 11 toward Columbia Furnace, $90,000.
Southampton Co.—reconstr. sections Route 35, Route 58 Boykins, $100,000.
curbs and gutters Route 58, Town of Courtland $26,445.
Spotsylvania and Stafford Counties—b. conc. surf. on sections Route 1, $100,000.
Stafford Co.—imprv. Route 1 (Int. 401) Prince William Co. Line-South, $1,429,359.
Sussex Co.—superelevation of curves, Route 35, $50,000.
Tazewell Co.—spot imprv. Route 67, Richlands-north, $50,000.
b. conc. surf. Route 19 and 460, Tazewell-Bluefield, $33,000.
reconstr. Route 61, West of Bland Co. Line West, $200,000.
sidewalks Route 16, Village of Bishop, $20,000.
Washington Co.—imprv. Route 91, Ketron Corners-Damascus, $60,000.
reconstr. Route 58, Damascus-West, $150,000.
reconstr. Route 58, West of Bristol, west, $100,000.
Washington and Smyth Counties—b. conc. surf. on sections Route 11, between Abingdon and Marion $50,000.
imprv. Route 11 (Int. 402) Tennessee State Line-East, FAI, $2,350,261.
Westmoreland and King George Counties—reconstr. Route 205, East of W.C.L. Colonial Beach-Route 301, $200,000.
Wise Co.—reconstr. Alt. 58, East Norton-East, $100,000.
correction of drainage, Route 23, town of Big Stone Gap, $10,000.
reconstr. Route 23, between Appalachia and Norton $275,000.
Wythe Co.—curb, gutter and sidewalk, Route 21, Town of Wytheville, $30,000.
b. conc. surf. Route 21, South Wytheville-South $47,663.
York Co.—reconstr. Route 173, Route 17-Goodwin Neck Area, $90,000.
York and James City Counties—reconstr. Route 60 West Williamsburg-West, $150,000.
City of Fredericksburg—b. conc. surf. Alt. Route 1, $20,000.
Wyo., Casper—City, City Hall, street imprv., curbs and gutter, $500,000.

(Continued on page 128)

Dumpcretes on OHIO Highways

C. F. Replogle Company used a portable concrete plant set-up and Dumpcretes for fast, flexible handling of 3 widely separated Ohio highway jobs in one season. Paving spread started at Zanesville—moved to Middletown and back to Circleville, Ohio. 123,000 cubic yards of concrete were hauled and placed for over 19 miles of paving with structures.

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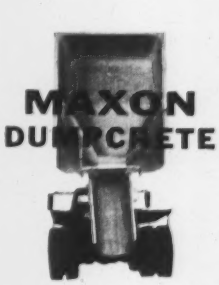
Capital investment in equipment • Confusion at paving site • Downtime and labor costs • Wide shoulder maintenance.

Dumpcretes can give you:

Lower operating costs • *Flexible* delivery to paving site *and* structures • Closer quality control • Better production.



MAXON CONSTRUCTION COMPANY, INC.
Manufacturing Division 11
2600 Far Hills Building, Dayton 9, Ohio

Please send me your new Dumpcrete Catalog.

NAME _____
TITLE _____
FIRM _____
ADDRESS _____
CITY _____ ZONE ___ STATE ___

78 cents per million gallons... pumped by Westinghouse

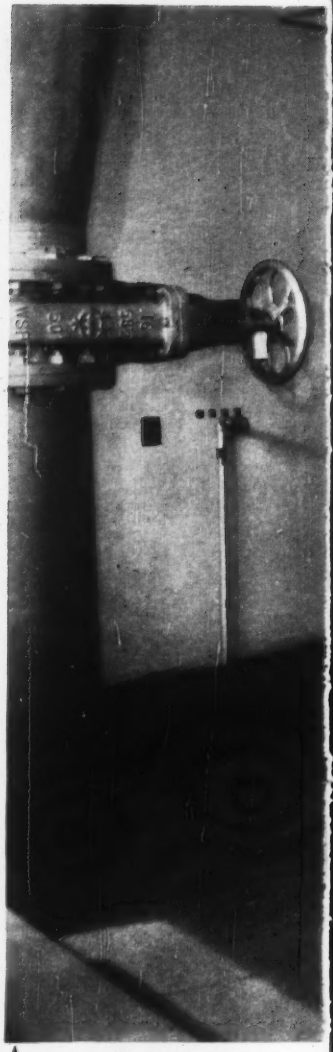
Basic operating cost of pumping stations in the Tacoma, Washington, sewage plant is of more than usual importance in the over-all plant cost because of an unusually high gallons-per-capita-day flow through the system. Engineers found it necessary to plan for nearly three times normal.

In the main pumping plant at Tacoma, four Westinghouse vertical pump motors handle the load. They are cut in and out as required and the sequence of rotation changed automatically. The station is unmanned except for periodic checks and maintenance by operators from the treatment plant.

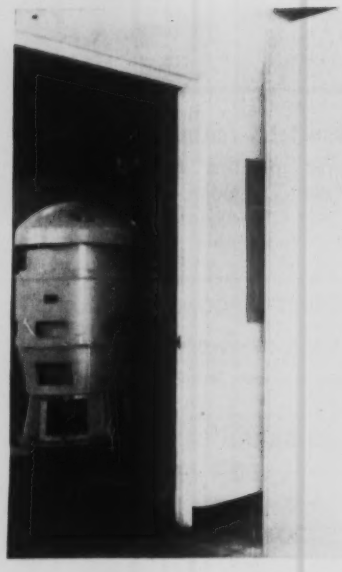
Although the pumping requirement is high in proportion to the population served (about 67,000) the actual pumping cost is not. Yearly costs in the Tacoma plant average about 78 cents per million gallons of sewage pumped. Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa. J-94075

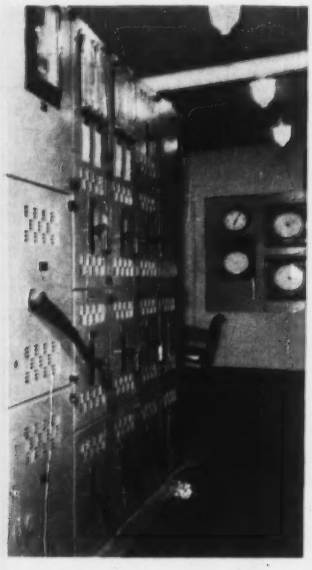
YOU CAN BE SURE... IF IT'S

Westinghouse

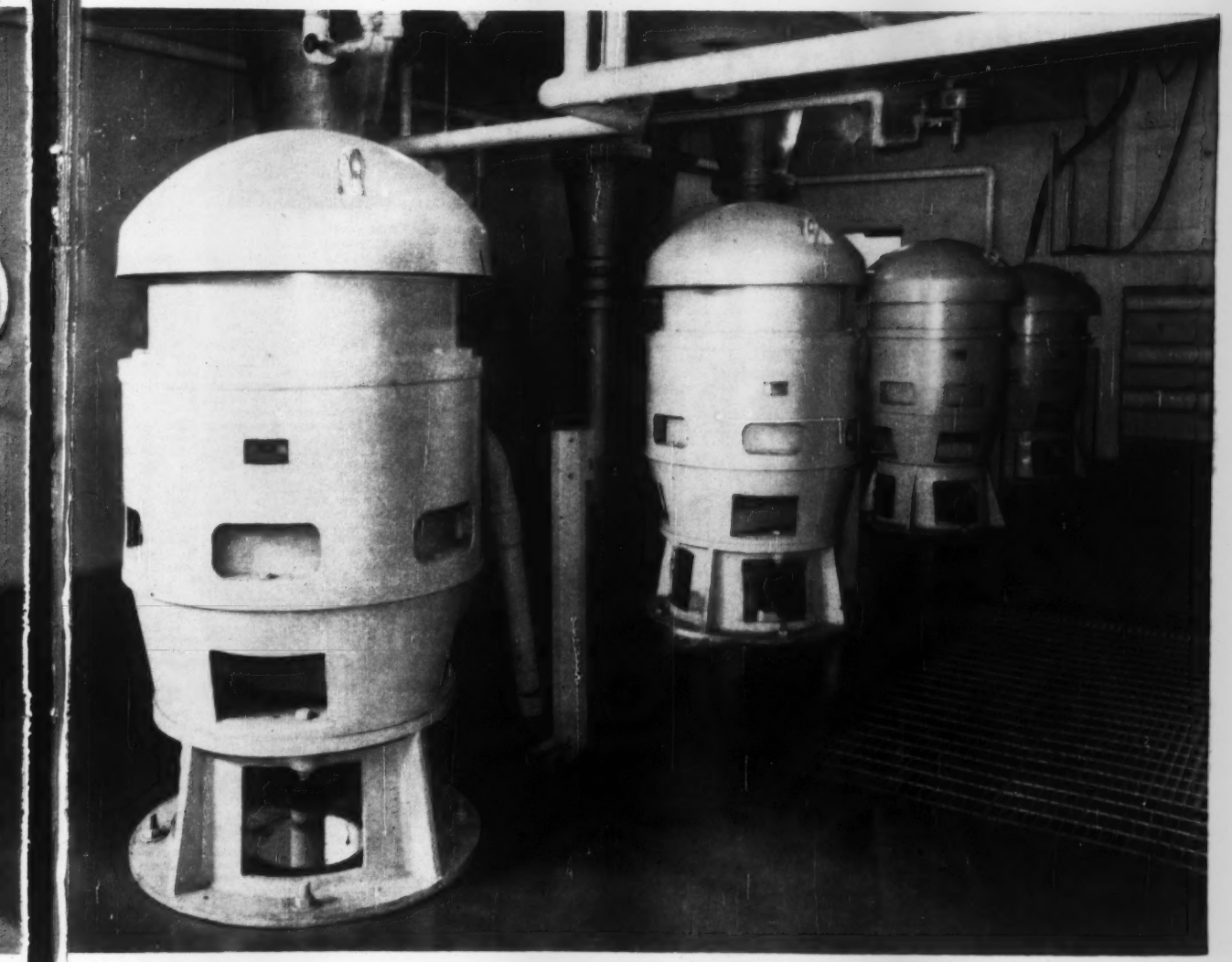


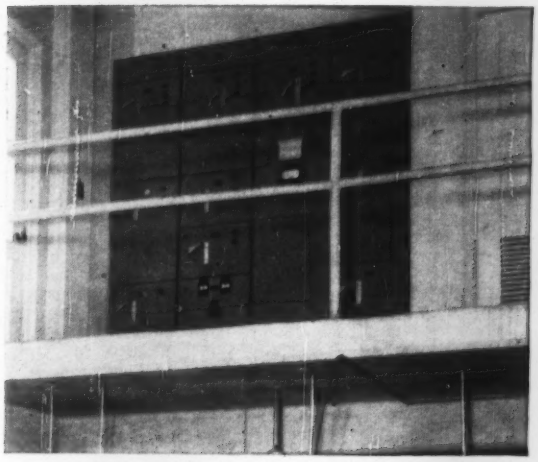
The four Westinghouse vertical pump motors in the Tacoma plant—4000 gpm, 50 hp; 8000 gpm, 100 hp; 10,000 gpm, 100 hp; 12,000 gpm, 125 hp.



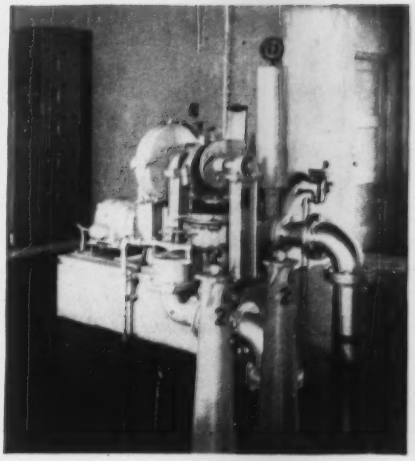


Distribution of power to motor and lighting circuits for the entire plant is through this Westinghouse switchgear, located in the main pump building.





Control center for many of the sewage plant motors, located on a balcony to conserve space, is typical of the Westinghouse unitized equipment which simplifies sewage plant electrical construction.



This Westinghouse motor drives one of the many pumps in the treatment plant. Note convenient location of control unit for this and other adjacent motors.

(Continued from page 125)

EARTHWORK, WATERWAYS

▲ **Calif., San Bernardino**—Bd. Supervs. San Bernardino Co., two-phase Fontana Flood Control Proj. Fontana, $812,620. Rialto Flood Control Project, Rialto, $212,298.

AIRPORTS

Tex., Beaumont — AIRPORT — City, City Hall, airport imprvs. $738,615.

▲ **Tex., El Paso**—AIRPORT—City, City Hall, plans by Garland & Hilles, Banner Bldg., addnl. airport imprvs., incl. resurfacing runways, new taxiway. $1,000,000. CD 1/10/56.

AMERICANS ABROAD

† **Algeria, Algiers**—OFFICE—Dpt. State, Office of Foreign Bdg., Wash., D. C., U. S. A., plans by John Lyon Reid, 1069 Market St., San Francisco 3, Calif. U. S. A., consulate general office bldg.

▲ **Austria, Vienna**—HOTEL—Hotel Studiengesellschaft, m.b. H., Vienna, plans Vienna-Hilton Hotel, Beethoven Sq. and Stadtpark, $6,000,000. Hilton Hotels International, Waldorf-Astoria, New York 22, N. Y., U. S. A., will operate.

† **Chile, Santiago**—RESIDENCE—Dpt. State, Officer of Foreign Bldgs., Wash., D. C., U. S. A., plans by Paul Thiry, Architect, 800 Columbia St., Seattle 4, Wash., U. S. A., embassy residence.

† **Dominican Republic, Ciudad Trujillo**—OFFICE—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Rogers & Taliaferro, 18 West St., Annapolis, Md., U. S. A., embassy office bldg. annex.

† **Finland, Helsinki**—OFFICE, etc.—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Harwell H. Harris, Architect, Frank H. Sherwood, Engineer, 3613 W. 7 St., Fort Worth, Tex., U. S. A., embassy office bldg. and staff housing.

† **Greece, Athens**—OFFICE—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Walter Gropius, Architects Collaborative, 96 Mt. Auburn St., Cambridge, Mass., U. S. A., embassy office bldg.

† **Indonesia, Djakarta**—OFFICE—Dpt. State, Office of Foreign Bldg., Wash., D. C., U. S. A., plans by Raymond & Rado, 101 Park Ave., New York 17, N. Y., U. S. A., embassy office bldg.

† **Ireland, Dublin**—OFFICE—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by John MacL. Johansen, 70 Elm St., New Canaan, Conn., U. S. A., embassy office bldg.

† **Lebanon, Beirut** — OFFICE — Dpt. State, Office of Foreign Bldg., Wash., D. C., U. S. A., plans by Ralph Rapson, 720 Washington St. S.E., Minneapolis 14, Minn., U. S. A., embassy office bldg.

† **Liberia, Monrovia**—RESIDENCES, etc.—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Mills, Petticord & Mills, 14 and Park Rd. N.W., Wash., D. C., U. S. A., 2 Senior Officer's Residences and staff housing.

† **Malaya, Singapore**—OFFICE—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by A. Quincy Jones, Frederick E. Emmons, Archt., 12248 Santa Monica Blvd., Los Angeles 25, Calif., U. S. A., consulate general office bldg.

† **Morocco, Rabat**—OFFICE, etc.—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Ketchum, Gina & Sharp, 227 E. 44 St., New York 17, N. Y., U. S. A., embassy office bldg. and residence.

† **Morocco, Tangier**—OFFICE—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Hugh Stubbins Assoc., 806 Massachusetts Ave., Cambridge, Mass., U. S. A., consulate general office bldg.

† **Peru, Lima**—OFFICE—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Keyes & Lethbridge, 1300 Connecticut Ave. N. W., Wash., D. C., U. S. A., embassy office bldg.

Phillippine Islands, Manilla—OFFICE—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by A. L. Aydelott & Assoc., 2080 Peabody Ave., Memphis 4, Tenn., U. S. A., embassy office bldg. annex.

† **Philippine Islands, Manila**—HOUSING, etc.—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Garden A. Dailey, 442 Post St., San Francisco, Calif., U. S. A., 30-apartment house unit embassy staff housing, plans by Alden B. Dow, 315 Post St., Midland, Mich., U. S. A., 60-unit apartment embassy staff housing; plans by Sherlock Smith & Adams, 303 Washington Ave., Montgomery, Ala., U. S. A., embassy reproduction center.

† **Poland, Warsaw**—Office, etc.—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Welton Becket & Assocs. 5857, Wilshire Blvd., Los Angeles 36, Calif., U. S. A., embassy office bldg. and staff housing.

† **Taiwan, Taipei**—OFFICE—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Anderson, Beckwith Baible, Campbell & Aldrich, 38 Newbury St., Boston, Mass., U. S. A., embassy office.

† **Thailand, Bangkok**—OFFICE—Dpt. State, Office of Foreign Bldgs., Wash., U. S., D. C., U. S. A., plans John Carl Warnecke, 111 New Montgomery St., San Francisco, Calif., U. S. A., embassy office bldg.

† **West Africa, Nigeria**—OFFICE, etc.—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Weed-Russell-Johnson Assoc., 550 Brickell Ave., Miami 32, Fla., U. S. A., consulate general office bldg., staff housing, at Lagos.

PUBLIC BUILDINGS

Ariz., Flagstaff—LIBRARY, etc.—University of Arizona plans by Lester Byrom, 319 E. Coronado Rd., Phoenix, library addn., administration bldg. and remodeling portion of existing bldg., $581,500; plans by Terry Atkinson, 2424 East Broadway, Tucson, 3 story classroom bldg. for industrial areas, home economics, arts and crafts, $975,000. CD 4/2.

▲ **Ark., Little Rock**—CHILDRENS COLONY SCHOOL—Arkansas State Childrens Colony, Bd. Directors, c/o David B. Ray, supt., Union Life Bldg. plans by Ginocchio, Cromwell & Assocs., 416 Center St., 6 cottage-type dormitories, school bldg., administration bldg., laundry bldg. $1,200,000.

▲ **Ark., Little Rock**—HOSPITAL—Arkansas State Hospital for Nervous Diseases, c/o Administrator, Markham and Elm Sts., plans by C. Trapp, Clippard & Phelps, 713 W. 2 St., 1 story 200 bed hospital. $2,500,000. CD 1/23/53.

▲ **Calif., Los Angeles**—SCHOOLS—Bd. Educ., 1425 S. San Pedro St., plans by Bowen, Bowen & A. S. Nibecker, Jr., archts.-consult. engrs., 2873 Colorado Blvd., replace administration bldg., shop bldg. and domestic science bldg. at Robert Louis Stevenson Junior High School, $1,000,000; plans by King, Benioff & Assocs., engrs., archts.-consult. engrs., 14906 Ventura Blvd., Sherman Oaks, strengthen and modernize Belvedere Junior High, $380,000. CD 4/8/55.

▲ **Calif., Modesto**—SCHOOLS—Modesto City Elementary High School & Junior College Dist., c/o Supt., 426 Locust St., defeated bonds Apr. 9, for Elementary School Dist., $700,000; High School Dist., $1,500,000; and Junior College Dist., $1,000,000. CD 2/8.

▲ **Calif., Puente**—SCHOOL—Hudson School Dist., 15839 E. Rowland St., bond election May 17, school facilities $1,000,000.

▲ **Calif., San Diego**—CIVIC THEATER—City, Civic Center, 1600 Pacific Hy., defeated bonds Apr. 12, civic theater, $3,500,000. CD 3/7.

Calif., San Jacinto—SCHOOL—San Jacinto Junior High School Dist. Plans by Frick & Frick, 340 N. Altadena Dr., Pasadena, San Jacinto Junior High School, $500,000.

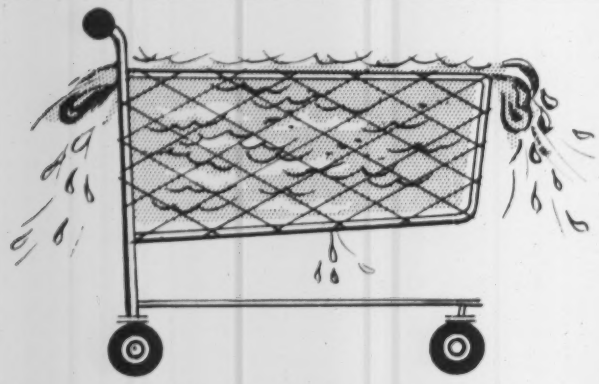
▲ **Calif., Torrance**—SCHOOL—Torrance Unified School Dist., 2335 Plaza Del Amo, plans by George F. Schreiber, 5445 E. Washington Blvd., Los Angeles 22, North Torrance High School addns., Contr. 2, administration bldg. and library addn. and constr. of home economics bldg., shop bldg., football stadium, $1,500,000. CD 6/14/55.

Colo., Colorado Springs—HOSPITAL—Memorial Hospital, Colorado Springs, voted $600,000 bonds Apr. 2, 3 story hospital addn. CD 3/11.

▲ **Conn., Wolcott**—SCHOOL—Town, Wolcott, plans by Lyons & Mather, 211 State St., Bridgeport, high school, Boundline Rd. $1,000,000.

Ky., Falmouth—SCHOOLS—Pendleton Co. Bd. Educ., plans by Ed. J. Beiting, Jr., 1002 Monmouth St., Newport, 2 story, 100x350 ft., brick elementary and high schools. $600,000. I. C. Disher, 216 E. Ninth St., Cincinnati, O., consult. engr.

▲ **Ky., Louisville**—UNIVERSITY CENTER—University of Louisville, Third and Shipp Sts., plans by Hartstern, Louis & Henry, McDowell Bldg., Zone 1, 3½ story, brick, university center bldg. $1,500,000. E. R. Ronald & Assoc., 554 S. Third St., Louisville, Zone 1, consult. engrs. CD 2/5.



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World's largest manufacturer of Submergible motors and pumps for over 35 years

Mass., Clinton—SCHOOL—Town, School Lp[illegible] by S. W. Haynes & Assoc., Inc., 336 Main St., ... high school between S. Main St., Rte. 10, $600,000. Constr. in 1958. CD 3/9/56.

Mass., Randolph—SCHOOL—Town, School Bldg. Comm., Geo. C. Beatty, chn., c/o School Dpt.; plans by Korslund, LeNormand & Quann, Inc., 506 Washington St., Norwood, school. $700,000. Constr. in 1957. CD 2/4/55.

Mass., Shelburne Falls—SCHOOL—Towns of Shelburne and Buckland, E. R. Field, chn., 25 Main St., Shelburne Falls, plans by Bernhard Dirks, Mohawk Trail, Greenfield, regional elementary school, Grove and Mechanic Sts. $650,000. Constr. in 1957.

▲ **Mich., Addison**—SCHOOL—Addison School Dist., bond election May 28, conversion of present high school to Junior High School, elementary school to serve Somerset and Somerset Center, Manitou Beach school addn $1,700,000.

▲ **Mich., Center Line**—SCHOOL—City, Bd. Educ., Clarence Crothers, supt. Schools; 26300 Arsenal St., $1,850,000 bond election June 10, Junior High School, addns. to two elementary schools. CD 6/22/54.

▲ **Mich., Jackson**—HOSPITAL—City, Bd. Managers Foote Hospital, voted $2,000,000 bonds, Foote Hospital addns. CD 3/20.

▲ **Mich., Oak Park**—SCHOOL—City, Louise Shaw, clk., 13600 Oak Park Blvd., voted bonds Apr. 15, elementary school. $1,000,000. O'Dell, Hewlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, archts. CD 3/27.

▲ **Mich., Whitehall**—SCHOOL—City, Bd. Educ., White Lake School Dist., plans by Magnum & Sumner, 208 Montgomery Bldg., Muskegon, high school. $1,500,000.

Minn., Redwood Falls—SCHOOL—Bd. Educ., A. G. Siefert, clk., plans by Pass, Rockey & Church, Mankato, high school addn. $515,000.

Mont., Bozeman—OFFICE—Montana State College, Bozeman, plans by Cushing, Terrell & Assocs., 1333 N. 27 St., Billings, office, $650,000-$700,000.

▲ **N. H., Portsmouth**—HOUSING—Portsmouth Housing Auth., 126 Daniel St., plans by John D. Betley, 944 Elm St., Manchester, housing incl. 31 buildings, 124 units, Gosling Rd. and Wood Ave. $1,750,000. Goldberg, LeMesseurier Assoc., 669 Boylston St., Boston, Mass., structural engrs. CD 9/14.

N. J., Haddonfield—ARMORY, etc.—State Dpt. Defense, Armory Dr., Trenton, armory bldg. and also motor vehicle storage bldg. $650,000.

▲ **N. Y., Brooklyn**—GARAGE—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, garage on site bounded by Flatbush Ave. Ext., Fleet St., Albee Square and Willoughby St. for Traffic Dept., $2,650,000. CD 11/21/46.

▲ **O., Cleveland**—PARKING GARAGE—City, City Hall, 3 story underground garage to be built under Mall between St. Clair and Rockwell Ave. $4,500,000. H. K. Ferguson Co., 1783 E. 11th St., consult. engr. Robert Kelly, city engr.

O., Wilberforce—DORMITORIES, etc.—State Dpt. P. Wks., 705 Ohio Depts. Bldg., Columbus, 2 men's dormitories. $470,000; gymnasium addn. for men, gymnasium for women and a natatorium between, $500,000. at Central State College. CD 11/15/55.

▲ **Pa., Lansdale**—SCHOOL—North Penn Joint School Auth. Plans by Howell Lewis Shay & Assocs., Packard Bldg., 15 and Chestnut Sts., Phila., Junior High School, North Wales Rd., Upper Gwynedd Twp. $1,000,000. CD 3/29.

▲ **Pa., Morrisville**—SCHOOL—Morrisville School Auth., Robert Morris School, plans by Micklewright & Mountford, 90 E. Stuyvesant Ave., Trenton, N. J., Junior-Senior High School on 20 acre tract on West Palmer St. west of Hamilton Blvd. $1,100,000. CD 2/1/52.

Pa., West Chester—HEATING PLANT—General State Auth., 18 and Herr Sts., Harrisburg, plans by Sanders & Thomas, Security Trust Bldg., Pottstown, heating plant and expansion of utilities at West Chester State Teachers' College. $670,400. A. F. Jones, ch. engr. CD 3/2/56.

Tex., Corpus Christi—SCHOOL—Corpus Christi Independent School Dist., P.O. Box 110, plans by Brock & Anderson, c/o Jones Bldg., Kozar Junior High School addn, off Ocean Dr., 3000 Sokol St., Proj. Tx-56-C-63-A6. $902,000. CD 3/12/54.

Tex., Longview—SCHOOL—Pine Tree Independent School Dist., c/o James T. Ogg, supt., Longview, school $500,000.

Tex., Premont—SCHOOL—Premont Independent School Dist., election May 25, high school. $590,000.

Wash., Anacortes—SCHOOL—School Dist. 321, Anacortes, plans by D. McKee, Anacortes; Island View Elementary School, J Ave. and 24 St., west of Central Grade School. $600,000. CD 5/23/56.

▲ **Wash., Edmonds**—SCHOOL—School Dist. No. 15, Edmonds, $600,000 bond election May 28 and special levy to aid in financing, high school $2,500,000; two elementary schools each $500,000 in Mountlake Terrace District. CD 9/28.

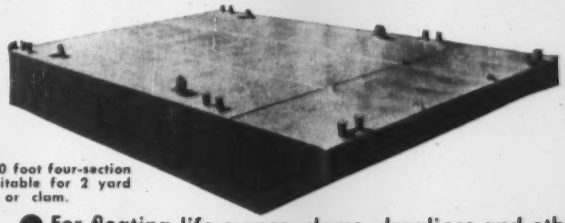
Wash., Mead—SCHOOL—School Dist. 354, Mead, plans by Cullver, Gale, Martell & Norrie, Realty Bldg., Spokane, Junior High School. $700,000. Bids next month. CD 11/16.

COMMERCIAL BUILDINGS

Conn., Bridgeport—STORE—D. M. Read Co., 1050 Broad St., expanding store. $500,000.

▲ **Conn., Hartford**—APARTMENT—Norman W. Zaubler, 1007 Farmington Ave., West Hartford, plans by Huntington & Darbee 36 Lewis St., Hartford, two

MANITOWOC
SECTIONAL BARGES



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Northern Illinois Toll Highway

Bids to be opened May 29, 1957

CONTRACT E-1B

The work to be done under this contract shall be commenced on June 30, 1957, or such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this contract shall be completed on or before December 15, 1958, and consists of: The grading, drainage, paving, the construction of appurtenances and the erection of precast concrete and concrete arch bridges for approximately 0.39 miles of the Northern Illinois Toll Highway in Construction Section E-1B in Aurora Township, Kane County, Ill.

The approximate quantities for the principal items of work are:

Rock Excavation	1,800 C.Y.
Borrow	80,000 C.Y.
Reinforced PCC Pavement	1,730 S.Y.
Structure Concrete	22,000 C.Y.
Reinforcing Steel	5,850,000 Lbs.

CONTRACT T-6B

Part of the work under this contract shall commence on June 30, 1957. Other work shall commence on July 31, 1957, or earlier as agreed upon. All work under Contract T-6B shall be completed before December 15, 1957 and consists of: the grading, drainage, paving, the construction of appurtenances, and the erection of precast concrete and steel bridges for approximately 2.57 miles of the Tri-State route of the Northern Illinois Toll Highway in Construction Section T-6B in Leyden Township, Cook County, Ill.

The approximate quantities of the principal items of work are:

Roadway Excavation	71,000 C.Y.
Borrow	2,886,000 C.Y.
Selected Subgrade	99,000 C.Y.
Granular Subbase	38,000 C.Y.
10" Reinforced PCC Pavement	129,000 S.Y.
3" Bituminous Concrete Shoulders	50,000 S.Y.
Structure Concrete	29,000 C.Y.
Reinforcing Steel	3,580,000 Lbs.
Metal Piles	91,000 L.F.
Structural Steel (Erection only)	4,800,000 Lbs.

CONTRACT 2-6C

Part of the work under this contract shall commence on June 30, 1957. Other work shall commence on July 31, 1957 or earlier as agreed upon. All work under Contract T-6C shall be completed before Dec. 15, 1957 and consists of the grading, drainage, paving, the construction of appurtenances, and the erection of precast concrete and steel bridges for approximately 2.81 miles and for approximately 0.97 miles of connecting roadway in the construction section T-6C of the Tri-State Route of the Northern Illinois Toll Highway in Proviso Township, Cook County, Ill. and York Township, DuPage County, Ill.

The approximate quantities of the principal items of work are:

Roadway Excavation	807,000 C.Y.
Borrow	1,682,000 C.Y.
Selected Subgrade	120,000 C.Y.
Granular Subbase	72,000 C.Y.
10" Reinforced P.C.C. Pavement	289,400 S.Y.
3" Bituminous Concrete Shoulders	98,000 S.Y.
Structure Concrete	25,000 C.Y.
Reinforcing Steel	3,000,000 Lbs.
Metal Piles	110,000 L.F.
Structure Steel (Erection only)	3,000,000 Lbs.

CONTRACT T-6BC

This contract covers a combination of Contracts T-6B and T-6C taken together.

THE ILLINOIS STATE TOLL HIGHWAY COMMISSION

20 N. Wacker Drive, Chicago — By Austin L. Wyman, Chairman

Write, wire or phone for detailed information and necessary forms. Chief Engineer, Room 1654, 20 N. Wacker Dr., Chicago 6, Ill. Telephone FRanklin 2-7020.

6 story, brick, glass 190-unit apartment bldgs., Bloomfield Ave. $4,000,000.

Conn., New Haven—DIAGNOSTIC, etc.—Grace-New Haven Community Hospital, 789 Howard Ave., diagnostic and treatment facilities for Outpatients department, $570,000. CD 6/14/45.

▲ **Ill., Chicago**—APARTMENT—Owner, c/o I. Richard Cobrin Co., 2970 Lake Shore Dr., plans by Loewenberg & Loewenberg, 111 W. Monroe St., Chicago, 25 story, 236-unit apartment, 3900 N. Lake Shore Dr. $4,500,000.

▲ **Ill., Granite City**—HOSPITAL—St. Elizabeths Hospital, Sisters of Divine Province, 2100 Madison Ave., Madison, plans by Gabriel & Dulgeroff, 1839A Delmar Blvd., 6 story, brick, steel, concrete wing addn. and complete remodeling of present hospital, $2,750,000.

Md., Baltimore—HOSPITAL—Bon Secours Hospital, 2025 E. Fayette St., plans by Fisher, Nes, Campbell & Assocs., 1020 St. Paul St., Zone 2, 5 or 6 story, brick, steel concrete block hospital addn. $500,000.

▲ **Mass., Dedham**—SHOPPING CENTER—Dedham Development Trust, 725-785 Providence Hy., plans by Roy F. Cinnchetti, 71 Oakdale Rd., Newton Center, shopping center, incl. three units, between Rtes. 1 and 1A, 25 acres. $2,500,000. CD 12/5.

▲ **Mass., Worcester**—PHYSICS—Worcester Polytechnic Institute, Institute Rd., plans by Rogers & Butler, 299 E. 44 St., New York, N. Y., 3 story, 60x220 ft., brick, steel physics bldg., West St. $1,500,000. Constr. in 1957.

▲ **Mich., Warren**—HOSPITAL—Warren Hospital, Warren Chamber of Commerce, Warren, hospital. $2,000,000.

▲ **Minn., St. Paul**—DORMITORY—St. Thomas College, 2115 Summit Ave., Rev. J. P. Shannon, pres., plans by H. Spitznagel & Assocs., 1800 S. Summit St., Sioux Falls, S. D. 5 story, 300 bedroom dormitory. $1,200,000.

Miss., Jackson—DORMITORIES—Millsaps College, 1701 N. State St., two dormitories. $700,000.

Mo., Springfield—MOTEL—John Duggans, 2137 N. Glenstone St., plans by Ernest Ward, 903 E. Walnut St., 152-unit motel, swimming pool. $500,000.

N. J., East Orange—OFFICE—Emil A. Schmidlin, 586 Central Ave., plans by Emil A. Schmidlin & Ellis Leigh, 586 Central Ave., 2 story office, Evergreen Place and Halsted Place, $500,000.

N. J., Sea Isle City—SHOPPING CENTER—Freda Enterprises, Lavalette, shopping center, Landis Ave. $500,000.

▲ **N. J., Vineland**—HOSPITAL—Newcomb Hospital, Vineland, plans by Helge Westermann, 133 W. 57 St., New York, N. Y., hospital new wing. $1,500,000. Bids in 1958. CD 1/9/53.

N. Y., Brooklyn—APARTMENT—H T Constr. Corp., 474 Hemlock St., Zone 8, plans by Morris Rothstein & Son, 186 Joralemon St., Zone 2, 6 story apartment, and 43 car garage 2900 Ocean Ave. $780,000.

▲ **N. Y., Canton**—DORMITORY, etc.—St. Lawrence University, Canton, dormitory and dining hall. $1,200,000.

▲ **N. Y., New York**—OFFICE—Bankers Trust Co., 16 Wall St., Zone 5, plans by Emery Roth & Sons, 575 Madison Ave., Zone 22, altering office, 523-529 Fifth Ave. $1,386,000.

N. Y., New York—OFFICE, etc.—The Grace Institute, 149 W. 60 St., Zone 19, plans by Eggers & Higgins, 100 E. 42 St., Zone 17, office, school, commercial bldg., 75 St. and Lexington Ave. $700,000.

N. Y., Poughkeepsie—DORMITORY—Vassar College, Raymond Ave., plans by Eero Saarinen & Assocs., W. Long Lake Rd., Bloomfield Hills, dormitory, $934,000. CD 4/16.

▲ **O., Cincinnati**—HOMES—Brune-Harpenau, Inc., Glenway Ave., 82 one story and split-level brick homes, partial bsmnt., on extension of Moonridge Dr. $1,550,000. Edward Niemeier, 3818 N. Bend Rd., consult. engr.

▲ **O., Cleveland**—SCHOOL—Cleveland Institute of Music, 3411 Euclid Ave., Cleveland, Zone 15, plans by Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Zone 14, school. $1,000,000.

O., Cleveland—OFFICE—Peter D. Kleist & Co., 21670 Center Ridge Rd., Zone 16, plans by Snyder & Tekushan, 21670 Center Ridge Rd., Zone 16, 2 story, 30,000 sq. ft. office bldg. as a West District Operations Office, 15531 Lorain Ave. $600,000. Ohio Bell Telephone Co., lessee.

▲ **O., Eastlake**—SHOPPING CENTER—Rex land Co., 17903 St. Clair Ave., Cleveland, Zone 10, plans by Weinberg & Teare, Citizens Bldg., Cleveland, Zone 14, 325,000 sq. ft., 4 unit mall-type shopping center; 1 two story department store & 3 one story bldgs., parking for 3200 cars, $6,000,000.

Okla., Henryetta—TELEPHONE EXCHANGE—Southwestern Bell Telephone Co., 614 S. Main St., Tulsa, dial telephone exchange, 6 and Broadway. $500,000.

▲ **Okla., Muskogee**—SHOPPING CENTER—W. G. Osburn, 32 and Frisco Sts., Meadowslane Shopping Center, 32 and Frisco Sts. $1,000,000.

Okla., Oklahoma City—SAVINGS and LOAN—Local Federal Savings & Loan Assn., 210 N. Robinson St., 6 story Savings and Loan Bldg., 210 N. Robinson St. $500,000.

Pa., Barren Hill—SHOPPING CENTER—Becker & Lipschultz, 4411 N. Broad St., Phila., shopping center, Germantown Pike, $500,000.

▲ **Pa., Newtown**—RESIDENTIAL DEVELOPMENT—Dr. John Walker, Newtown, residential development 172 units, McEyre Manor. $2,500,000.

Pa., Phila.—HOSPITAL—Children's Hospital, 1740 Bainbridge St., hospital addns., alterations. $500,000.

Pa., Phila.—RESEARCH LABORATORY—University of Penna, 209 S. 36 St., plans by Louis I. Kahn, 138 S. 20 St., research laboratory for Medical School, $500,000. CD 10/14/48.

▲ **S. C., Charleston**—HOSPITAL—Bd. Trustees Roper Hospital, 1 Lucas St., plans by Samuel Hannaford & Sons, Dixie Terminal Bldg., Cincinnati, O. 300-bed hospital. $5,000,000. Lockwood Greene Engineers, Inc., Montgomery Bldg., Spartanburg, consult.-engr. CD 10/6/52.

▲ **Tex., Corpus Christi**—HOTEL, etc.—C. G. Glasscock, Sr., 16th Floor Wilson Tower Bldg., 20 story, 600 room, masonry hotel, $10,000,000; 17 story office, $6,000,000, on Corpus Christi Bay, off Ocean Dr.

▲ **Tex., Corpus Christi**—HOSPITAL—Sisters of Charity of the Incarnate Ward, Corpus Christi, plans by Wade, Gibson & Martin, Med. Prof. Bldg., Corpus Christi, and O'Connell & Probst, 504 W. 7th St., Austin, Spohn Hospital Addn. $2,250,000. CD 10/3.

▲ **Tex., Dallas**—DWELLINGS, etc.—Fox & Jacobs Constr. Co., Inc., 2714 McKinney, 250 dwellings $7,000,000 utilities water, sewers, paving, gas, $300,000 in Flair-South subdivision.

▲ **Wis., Port Washington**—HOSPITAL, etc.—St. Alphonsus Hospital, 743 N. Montgomery St., plans by Brust & Brust, 135 W. Wells St., Milwaukee, Zone 3, two wings, 5 story, bsemnt., hospital addn. and remodeling. $2,650,000.

Ont., Ottawa—HOUSING—Campeau Constr. Co., 525 Bank St., housing development, incl. 58 houses. Over $500,000.

▲ **Que., Montreal**—HOUSING—Millcraft Investment Corp., 5950 Cote des Nieges Rd., housing development, incl. 150 bungalows on new streets, Roxboro, Over $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Ala., Listerhill**—MILL—Reynolds Metals Co., Reynolds Metals Bldg., Richmond, Va., steel and plate mills addns., altering breakdown mill, and increasing continuous hot lines. $60,000,000.

Ark., Jonesboro—PLANT—Jonesboro Chamber of Commerce, and City, c/o Mayor Herbert Sanderson, City Hall, metal products mfg. plant, near airport, $500,000.

▲ **Calif., Burlingame**—WAREHOUSE, etc.—Purity Stores Ltd., Kearny and Francisco St., plans by Harry Weese, 104 S. Michigan Ave., Chicago, Ill., warehouse and office, Millsdale Industrial Park. $2,500,000. H. M. Engle, 1539 B 4th St., San Rafael, consult. engr. CD 4/2.

▲ **Calif., Oroville**—MILL—Oroply Corp., c/o Sacramento Box & Lumber Co., 65th & R Sts., plywood mill. $2,000,000. Constr. in 90 days.

▲ **Ill., Joliet**—PLANT—Amoco Chemicals Corp., c/o Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago, chemical plant. $10,000,000. Scientific Design, 2 Park Ave., New York, N. Y., consult. engr.

▲ **Kan., Coffeyville**—PLANT—Sherwin-Williams Co., 101 Prospect St. N. W., Cleveland, O., plant producing barium monohydrate, $1,000,000.

▲ **Mich., St. Joseph**—PLANT—Whirlpool Seeger Corp., D. W. Alexander, vice pres., St. Joseph, plant addn. $1,000,000.

N. J., Florham Park—OFFICE LABORATORY—Nicolet Industries, Inc., 70 Pine St., New York, N. Y., plans by Drake, Tuthill, Convery & Cueman, 100 Summit Ave., Summit, 19,000 sq. ft. rein.-con., steel split-level office-laboratory, Hanover Rd. $350,000.

N. J., Hoboken—PLANT—R. B. Davis Co., div. Penick & Ford, Ltd., 38 Jackson St., Hoboken, 2 story, brick, steel mfg. plant, 1 story shipping structure. $750,000.

N. J., Holmdel—LABORATORY—Bell Laboratories, 463 West St., New York, N. Y., plans by Eero Saarinen & Assocs., W. Long Lake Rd., Bloomfield Hills, laboratory development of 450 acre site. $500,000.

N. J., Vineland—WAREHOUSE—E. Roger Jones, Vineland, plans by Edward G. Scheidt, Newfield, 1 story, 126x206 ft., block, steel warehouse. $170,000.

N. Y., Brooklyn—GARAGE—Paramount Macaroni Co., 349-55 Suydam St., Zone 27, plans by John J. Tricarico, 44 Court St., Zone 2, 2 story garage, 367-69 Suydam St. $200,000.

N. Y., Brooklyn—FACTORY—Van Sinderin Building Corp., 1846 Pitkin Ave., 1 story factory, 321-339 Stanley Ave. $200,000. Morris Kweller, 144-36 76 Ave., Kew Gardens Hills, engr.

Pa., Phila.—Garage—Owner, c/o Keystone Assocs., engrs. 519 S. 46 St., Phila., garage office platform, 1327-29-31, Fairmount Ave. $100,000.

Tex., Dallas—TERMINAL—H&NT Motor Freight Lines, 842 Slocum St., plans by Hedrick, Stanley & Morey, archts.-consult. engrs., Box 5055, 222x75 ft. terminal, $110,000.

▲ **Tex., Dallas**—REFINERY UNITS—Magnolia Petroleum Co., c/o Magnolia Bldg., refinery units, $25,000,000.

Tex., El Paso—INDUSTRIAL—DeWitt & Rearick, 500 N. Kansas St., Owners & Developers, industrial bldgs., on 400-acres on Sandhills Rd. $100,000.

Tex., Hallettsville—PLANT—J. Weingarten, Inc., 600 Lockwood, Houston, poultry dressing plant, $100,000.

Tex., Houston—PLANT—Duncan Coffee Co., 1200 Carr St., coffee plant, 28.6-acre tract, off Katy Rd. $750,000.

▲ **Tex., Houston**—TRUCK CENTER—General Motors Corp., General Motors Bldg., Detroit, Mich., truck center, $1,000,000. CD 9/22/53.

▲ **Tex., Pasadena**—SMELTER—Champion Paper & Fibre Co., Pasadena, chemical recovery smelter and precipitator. $2,750,000. Brown & Root, Inc., 4600 Clinton St., Houston, consult. engr. CD 9/22/50.

Tex., Port Lavaca—PLANT—Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh, Pa., mechanical piping system for gas processing plant at Point Comfort, $100,000.

▲ **Utah, Salt Lake City**—OPERATIONS CENTER—Utah Power & Light Co., E. M. Naughton, pres., Kearns Bldg., plans by Ashton, Evans & Brazier, 24 S. W. Temple St., operations center, 1359 W. North Temple St., $1,700,000.

▲ **B. C., Creston**—BREWERY—Interior Breweries Ltd., c/o McKeen & Gray, 355 Burrard St., Vancouver, plans by McKee & Gray, 355 Burrard St., Vancouver, rein.-con. brewery to produce 75,000 bbl. per year. $1,500,000. Wohleb & Wohleb & Assocs., 715 S. Washington St., Olympia, Wash., U. S. A., consult. engrs.

Ont., London—PLANT—Gair Co. of Canada, W. Inman, mgr., 745 York St., 1 story, 230x330 ft., steel frame, brick, concrete block plant addn. $500,000. M. M. Dillon Co., 141 Maple St., consult. engr.

Que., St. Johns—PLANT, etc.—Dominion Blank Book Co., Ltd., 230 Foch St., plans by Jolicoeur & Ouellet, 5171 St. Denis St., Montreal, 1 story, 100,000 sq. ft. structural steel frame, plant and offices near new Canadian Chemicals Plant, $600,000.

UNCLASSIFIED

Alabama—GAS MAINS—Alabama-Tennessee Natural Gas Co., Huntsville, extend 10 in. gas mains 5.64 mi. toward Decatur, Madison and Morgan Counties. $125,000.

Alabama—RURAL DISTRIBUTION LINES—South Alabama Electric Co-operative, Troy, 42 mi. electric distr. line and system imprvs., Pike Co. $423,900.

▲ **Calif., Los Angeles**—SPORTS ARENA—Los Angeles Co. Coliseum Comm., 3911 S. Figueroa St., plans by Welton Becket & Assoc., 5657 Wilshire Blvd., sports arena, $5,742,000. CD 3/25, under LB.

Calif., San Rafael—BERTHING FACILITIES—Wm. H. McDevitt Co., 1934-4th St., San Rafael, berthing facilities, approx. 2,500 ft. downstream from Irwin St. Bridge on San Rafael Creek, (harbor, 2 story shop and office bldg. and bulkhead) $100,000.

Conn., New Haven—SKATING RINKS—City, City Hall, outdoor artificial ice skating rink, Jocelyn Sq. $84,442; outdoor artificial ice skating rink, West Rock Park, $85,605. C. A. Meadows & Assocs., Ltd., 2 Grange Rd., Toronto, Ont., consult. engrs.

Illinois—RURAL DISTRIBUTION LINES—Illinois Rural Electric Co., Winchester, 23 mi. rural distr. lines and sys. imprvs., Pike Co. $240,000.

Minnesota—RURAL DISTRIBUTION LINE—Southwestern Minnesota Co-operative Electric, Pipestone, 25 mi. electric distr. line, addnl. sub-station facilities and sys. imprvs., Pipestone Co. $145,000. CD 7/5/49.

Missouri—RURAL DISTRIBUTION LINES—Platte-Clay Electric Co-operative, Platte City, 35 mi. rural distr. lines, sys. imprvs., Platte Co. $405,000. CD 11/26/52.

Mo., St. Louis—TV STUDIO AND OFFICE—Columbia Broadcasting System, Inc., Merle S. Jones, pres., 906 Sidney St., Zone 4, plans by Yamasaki Leinweber & Assoc., 103 W. Fifth St., Royal Oak, Mich., radio and TV studio and office, Oakland Ave. opposite Forest Park, $500,000. CD 2/9/53.

N. J., Jersey City—PARK—Hudson Co. Park Comm., Administration Bldg., Lincoln Park, 30 acre park on west side of Passaic Ave. from Belleville Turnpike to Bergen Ave., Kearny, incl. laying out roads, paving, lighting, courts, etc. $400,000.

O., Akron—ICE RINK—City, City Hall, 100x200 ft. artificial ice rink, in Akron Rubber Bowl, $100,000. John A. Heinzelman Jr. & Assoc., 325 W. Fullerton St., Chicago, Ill., consult. engrs.

† **S. C., Parris Island**—ELECTRICAL DISTRIBUTION SYSTEM—Dist. P. Wks. Officer, Sixth Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C., plans by Gibbs & Hill, Inc., consult. engr. archt., Pennsylvania Station, New York, N. Y., electrical distribution sys. at the U. S. Marine Corps Recruit Depot. CD 9/17/51.

▲ **Texas**—PIPE LINE, etc.—Cosden Petroleum Corp., (Trust Pipe Line Co., a subsidiary,) Permian Bldg., Big Spring, 128 mi. 6 in products pipe line, Abilene to Wichita Falls, $1,500,000; products terminal, Wichita Falls, $500,000

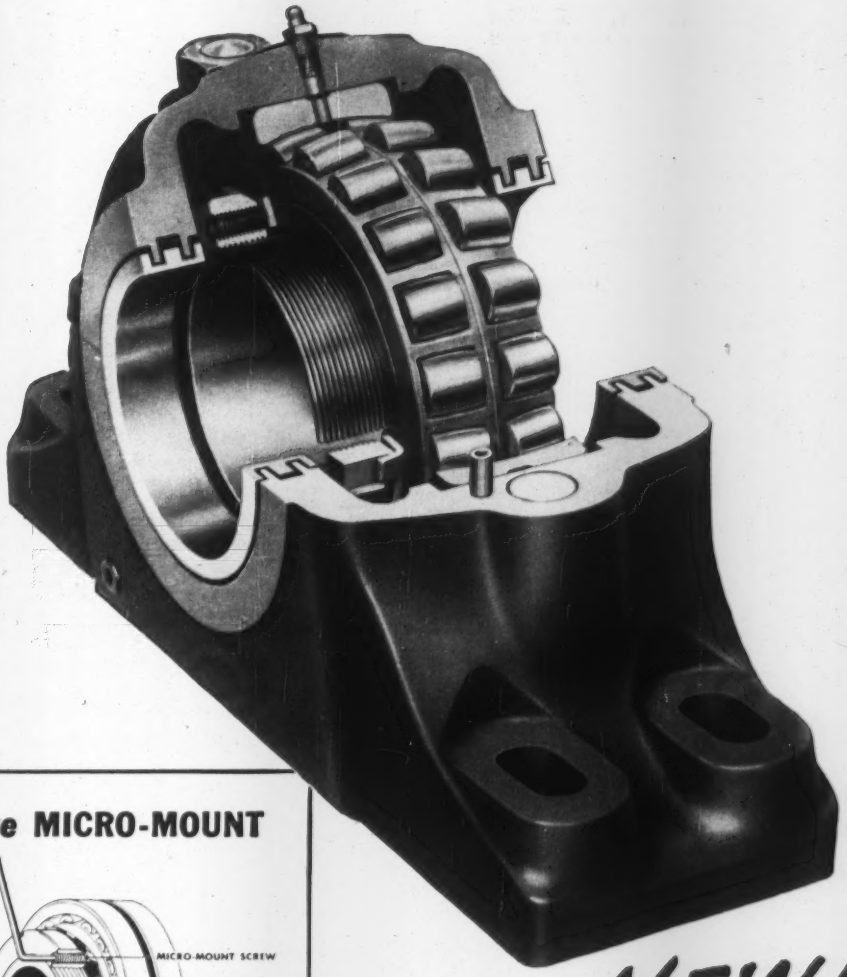
Texas—RURAL DISTRIBUTION LINES—Johnson Co. Electric Co-operative Assoc., Cleburne, Tex., 33 mi. electric distr. line and systems imprvs., Johnson Co. $249,000.

Tex., Austin—CAMP—Capitol Area Council, c/o W. S. Drake, Jr., campaign prof. chmn., c/o W. O. Gustafson, archt., 1312-A S. Congress St., Camp Tom Wooten Boy Scout, (playgrounds, camp facilities, swimming pool facilities, etc.). $200,000. CD 2/25/47.

▲ **Tex., Fort Worth**—MAUSOLEUMS, etc.—Greenwood & Mount Olivet Cemeteries, 3350 Whitesettlement Bd., plans by H. Hamilton Harris, 3613 W. 7th St., mausoleums at Greenwood and Mount Olivet cemeteries, mortuaries, administration offices, parking area mausoleums-100 ft. square marble floors and glassed walls over court yard, $6,000,000.

Tex., McCamey-Rankin—COLISEUM—Upton Co., c/o Courthouse, Rankin, voted bonds Apr. 2, coliseum at McCamey. $350,000. CD 3/26.

Wyoming—RURAL DISTRIBUTION LINES—Niobrara Electric Assn., Lusk, 36 mi. rural distr. lines and 20 mi. 69-kv transmission line and sys. imprvs., Niobrara Co. $250,000.



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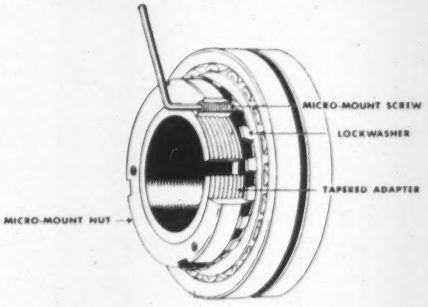

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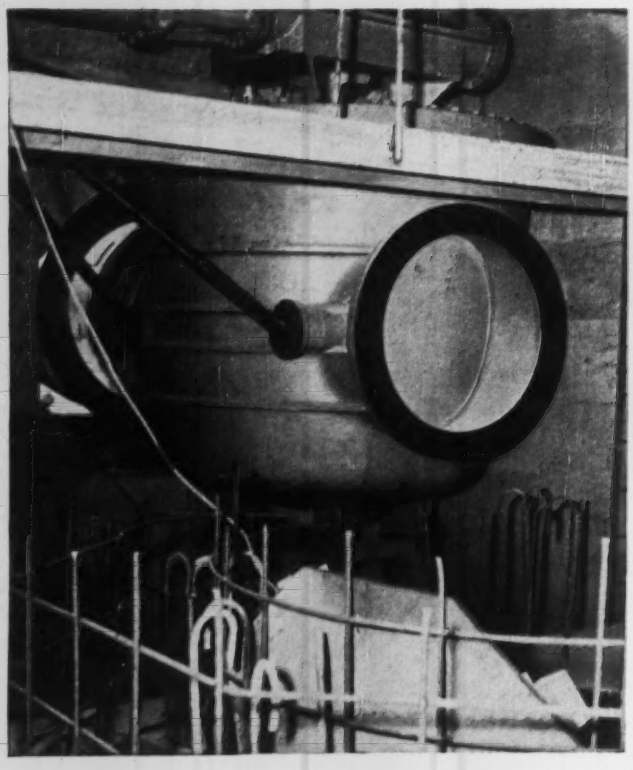

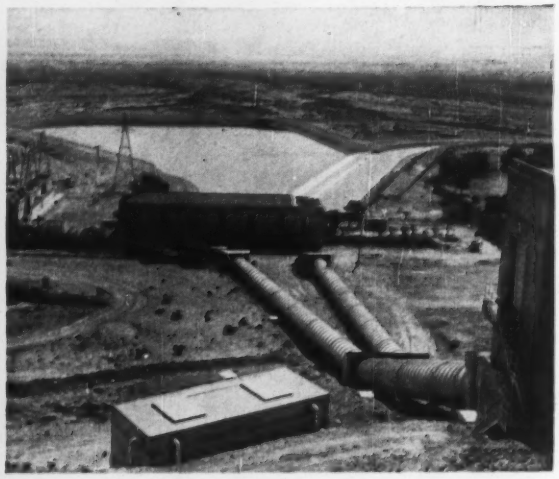

▲ Downhill view from Iron Mountain tunnel inlet shows first two conduits and pumping station, with reservoir and aqueduct in background. Excavation at right of pumping station will house third set of pumps, and third conduit will be added.

◀ This SMS-Rotovalve at Iron Mountain shows clearly the drop-tight shut-off position. In operation, the conical plug first lifts, then turns, finally reseats, giving you precise aperture control.

3 MORE SMS-ROTOVALVES ORDERED FOR PUMP DISCHARGE SERVICE AT IRON MOUNTAIN

As part of the expansion program for increasing the supply of water to southern California through the Colorado River aqueduct, three more SMS-Rotovalves have been ordered by the Metropolitan Water District of Southern California. These three 48″ x 64¼″ tapered Rotovalves, duplicates of six already installed at Iron Mountain Pumping Station, will be used for pump discharge service. Their inherent characteristics of a large reduction of flow area during the early part of the closing stroke make them ideally suited to control of surges in the event of emergency shut-off.

SMS-Rotovalves give the least possible pressure loss. In the open position, their full line opening offers no more resistance than a straight piece of pipe of the same diameter. Hydraulic unbalance and mechanical design make operation easy, and less powerful operators may be used. Rotovalves' flexibility suits them to any type of operation, any method of control, or any sort of location.

To obtain information on SMS-Rotovalves, as well as on the entire SMS line of Butterfly and Ball Valves, contact our nearest representative, or write S. Morgan Smith Company, York, Pennsylvania.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 20 Connecticut

STREETS AND ROADS

May 17 Vermont — May 20 Connecticut

BUILDINGS—BA

▲ **Mass., Swampscott**—SCHOOL—BA 5/15—Town, Supt. Schools, Hadley School, 24 Redington St., Senior High School, off Forest Ave. $1,270,000. Plans deposit $75, refundable. Extended date. Warren H. Ashley, 967 Farmington Ave., West Hartford, Conn., archt. CD 4/23.

HEAVY CONSTRUCTION—LB & CA

▲ **S. & A. Allen Constr. Co. Inc.**, 330 Rutherford Ave., Charlestown, Mass., CA $1,424,000, street parking facility, Fort Hill Square, Oliver and High Sts., BOSTON, MASS. City, Real Property Dpt., City Hall Annex, Boston, Mass. CD 4/17, under LB.

▲ **RHODE ISLAND**—State R. I. & Prov. Plants, Div. Purchase, State House, Providence.

Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., CA $1,820,819. Contr. 5703, Bid 863, grading, drainage 6.99 mi. Quaker Lane-Nooseneck Hill Rd., F.A. Proj. 1001 (15) Warwick; West Warwick, Greenwich and West Greenwich. Bids Apr. 10. CD 4/15, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 24 Pennsylvania

STREETS AND ROADS

May 14 Maryland — May 24 Pennsylvania

BUILDINGS—BA

▲ **Pa., Elkins Park**—SCHOOL—BA 5/21—Cheltenham Twp. School Dist., Elkins Park, 1 and 2 story, brick, block, granite Senior High School. $5,000,000. Heacock & Platt, 1505 Race St., Phila., Pa., archts. Allabach & Rennis, Inc., 16 S. Broad St., Phila., engr. CD 9/26.

▲ **Pa., Lansdowne**—SCHOOL, etc.—BA 5/22—Lansdowne-Aldon Joint School System, Lansdowne, high school addns., alterations. $1,125,000. Martin Stewart & Noble, 117 S. 17 St., Phila., Pa., archts. Allabach & Renis, Inc., 16 S. Broad St., Phila., Pa., engr. CD 2/24/56.

HEAVY CONSTRUCTION—LB & CA

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

McLean Contg. Co., Fidelity Bldg., Baltimore, Md., LB $1,463,018 (10 bidders) Contract B-635-50-420 and AA 460-3-520. 420 ft. steel beam bridge over Patapsco River on Hammonds Ferry Rd., near Lithicom, Baltimore and Anne Arundel Counties. Bids Apr. 30. CD 4/23.

BUILDINGS—LB & CA

▲ **Wilaka Constr. Co., Inc.**, 11 E. 44 St., New York 17, N. Y., LB $1,957,000 (11 bidders) general contract Brooklyn College LIBRARY exten. on Campus of Brooklyn College, Bedford Ave. and Ave. H, BROOKLYN, N. Y. Brooklyn College, Bd. Higher Educ. Office of the Business Manager, Boylan Hall, Bedford Ave. and Ave. H., Brooklyn, N. Y. Bids Apr. 30. CD 3/19.

▲ **Rosewood At Westbury Homes**, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. $1,200,000. 45 HOUSES, Jericho Turnpike, east of Post Ave., WESTBURY, N. Y.

▲ **Gerla & Shedlin**, c/o Lane Realty, 107-40 Queens Blvd., Forest Hills, N. Y. Owner Builds. $1,500,000. 50 HOUSES, Church Ave. north of Peninsula Blvd., WOODMERE, N. Y.

▲ **United Constr. Co.**, 1204 Lincoln Ave., Pittsburgh, Pa., CA Est. $2,500,000. irregular brick, block and steel SHOPPING CENTER, CRAFTON, PA., Material Service, Inc., 1024 Lincoln Ave., Pittsburgh, Pa. Phillip Friedman, 121 S. Mosley Ave., Pittsburgh, Pa., archt.

▲ **Ranallo Constr. Co., Inc.**, 50 26th St., Pittsburgh 22, Pa., LB $1,307,131. general contract SECONDARY SCHOOL, for Baden-Economy Joint School Bd., Economy Twp., FREEDOM, PA. Public School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Apr. 25. CD 4/3.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 14 South Carolina — May 16 Florida

STREETS AND ROADS

May 14 South Carolina — May 16 Florida, Tennessee

May 24 Kentucky

BUILDINGS—BA

▲ **Ky., Somerset**—PLANT—BA 5/16—General Electric Co. (Lamp Div.), River Rd., Schenectady, N. Y., (selected list of bidders) general contract for 1 and 2 story, metal siding, brick pressed glass headlight lamp plant and railroad siding, $3,500,000. Arthur G. McKee & Co., 2300 Chester Ave., Cleveland 14, O., consult. engrs. CD 1/9.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond. Bids opened 4/24.

Va.—**McAlister Constr. Co.**, 3306 Pineland Rd., Roanoke, Va. LB $266,228 (4 bidders) w. b. macad. 2.68 mi. Route 615, State Proj. 1383-09-17, Russell Co.;

Ga.—**R. G. Pope Constr. Co.**, Box 269, Bristol, Va. LB $90,432 (3 bidders) soil aggreg. 1.94 mi. Route 640, State Proj. 1395-10, S-779 (2), Washington Co;

Va.—**Slusher Constr. Corp.**, Box 1252, Roanoke, Va. LB $96,564 (5 bidders) soil aggreg 3.12 mi. Route 606, State Pro. 1311-12, S-978 (1) Botetourt Co.;

Va.—**Malpass Constr. Co. Inc.**, Box 4645, Norfolk 6, Va. LB $141,440 (5 bidders) soil aggreg. and 145 ft. bridge 2.92 mi. Route 601, State Proj. 1374-16-17, S 984 (1), Prince George Co. 1;

Va.—**D. S. Blount**, Aneagle, W. Va. LB $153,683 (5 bidders) soil aggreg. and 115 ft. bridge Route 682, State Proj. 1380-11-13, Roanoke Co.;

Va.—**Robertson-Henry Co., Inc.**, Box 2078 Huntington, W. Va. LB $252,748 (3 bidders) b. conc. 2.25 mi. Route 211, 1778-02, F-01-1 (11) Rappahannock Co.;

Va.—**Moyer Constr. Co.**, Box 905, Staunton, Va. LB $82,871 (6 bidders) soil aggreg. 3.33 mi. Route 600, State Proj. 1334-08, S-60 (4) Frederick Co.;

Va.—**E. W. Woolfolk**, Box 267, Bowling Green, Va. LB $122,059 (4 bidders) b. conc. 0.82 mi. Route 3, State Proj. 3388-14, F-012-1 (2) Spotsylvania Co.;

Va.—**Faulioner Constr. Co.** Box 236, Charlottesville, Va. LB $1,097,682 (3 bidders) b. conc. and 2 bridges 5.84 mi. Route 297, State Proj. 5915-040-5-06, 07-08-09, S-7 (3), S-SG-7 (4), Campbell Co.;

Va.—**Talbott-Marks Co., Inc.**, Box 308, Clarksville, Va. LB $1,601,009 (6 bidders) c. conc. and 5 bridges 2.53 mi. Route 401, 8040-07-08-09, 10-11-15 I-201-1 (1), Greensville Co. CD 4/9.

▲ **VIRGINIA**—Richmond-Petersburg Turnpike Auth., 1015 E. Main St., Richmond, Va.,

rejected bids Apr. 18, rein.-con. deck, safety walks, parapets and walls, installing drainage sys. consisting of c.i. and steel scuppers and wrought iron discharge piping and installing aluminum bridge railing, bridge approx. 4,240 ft. long, 90 ft. wde, consisting of two 40 ft. roadways separated by 4 ft. wall 0.8 mi. concrete deck, drainage and railing for James River Bridge in City of Richmond, LB $1,799,066. CD 3/28.

▲† **Wilson Electric Co., Inc.**, 1113 8th Ave. S., Nashville, Tenn., LB $1,041,440. furnishing, installing controls and instrumentation in supersonic circuit of propulsion wind tunnel at Arnold Eng. Development Center, ENG-40-126-57-19, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn. Bids Apr. 16. CD 4/15.

BUILDINGS—LB & CA

▲ **The Fluor Corp. Ltd.**, 2500 S. Atlantic Blvd., Los Angeles 22, Calif., CA Est. $2,000,000. design and construct modernizing, expanding carbon tetrachloride PLANT, SOUTH CHARLESTON, W. VA. Food Machinery & Chemical Corp., 1105 Coleman St., San Jose, Calif. CD 3/12/56.

▲ **Daniel Constr. Co.**, 429 N. Main St., Greenville, S. C., CA $1,213,500. 4-A TOLL OFFICE BLDG., Columbia, COLUMBIA, S. C. Southern Bell Telephone & Telegraph Co., Owen Bldg., Columbia, S. C., Bids Apr. 8. CD 3/4.

▲ **T. C. Brittain Co.**, Drawer B, Decatur, Ga., CA $1,173,027. **Tilson Road HIGH SCHOOL**, DECATUR, GA. DeKalb Co. Bd. Educ., DeKalb Bldg., Decatur, Ga. Bids Apr. 2, awarded Apr. 18. CD 4/10, under LB.

▲ **Bradford Builders, Inc.**, 1101 Lincoln Rd., Miami Beach, Fla., LB $1,029,599 Base Bid, KITCHEN and DINING HALL Bldg. 38, MAXIMUM SECURITY Bldg. No. 39, MAINTENANCE SHOP BLDG. No. 40; BOILER PLANT addn. Bldg. 41, LIFT STATION, Southern Florida State Hospital, West Hallandale, FORT LAUDERDALE, FLA. Bd. Comrs. State Institution, Tallahassee, Fla. Bids Apr. 25. CD 4/4.

▲ **J. Hilbert Sapp, Inc.**, 1905 N. Orange Ave., Orlando, Fla., LB $1,389,000. Projs. 21-1 and 21-2, low-rent HOUSING, PAHOKEE, FLA. Pahokee Housing Auth., Box 918, Pahokee, Fla. Bids Apr. 25. CD 4/4.

▲ **Virginia Eng. Co., Inc.**, 80 29 St., Newport News, Va., CA $6,412,000, 63 buildings, 496-units Southwick HOUSING, LOUISVILLE, KY. Louisville Municipal Housing Comm., Second and York Sts., Louisville, Ky. Bids Apr. 11, awarded Apr. 26. CD 4/15, under LB.

▲ **L. A. Warlick Contg. Co.**, 747 E. 11th St., Chattanooga, Tenn., LB $1,459,337, est. $1,350,000. constr. CENTRAL WING to Erlanger Hospital, CHATTANOOGA, TENN. Bd. Trustees, Erlanger Hospital, 241 Wiehl St., Chattanooga, Tenn. Bids Apr. 9. CD 3/27.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

May 14 Indiana — May 2 Michigan

May 28 Ohio

▲ **O., Cincinnati**—BA 5/21—City, City Hall, relocation and impry. Marburg Ave. and Madison Rd., elimination of grade crossing project in 4 phases, relocations, railroad relocation, and water mains. $3,449,895. Plans deposit $10 on each set. CD 11/9.

▲ **ILLINOIS**—BA 5/23—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

Cont. T-1-A, grading, drainage, paving, seeding, appurtenances, erecting precast and structural steel bridges 3.385 mi. beginning at Grand Trunk and Western R.R. westerly to Ashland Ave., near Harvey. $3,750,000. Sverdrup & Parcel, Inc., 1134 Locust St., St. Louis 1, Mo., section engr. CD 5/11.

▲ **Mich., Detroit**—TERMINAL BLDG.—BA 5/28—Wayne Co., Bd. Rd. Comrs., 726 City-County Bldg., terminal Bldg. Detroit-Wayne Major Airport, WC 57-C 10, FM 82-170-51 CAA 9-20-032-717. $8,363,814. Plans deposit $25, refundable. CD 4/17.

▲ **ILLINOIS**—BA 5/29—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

Cont. T-6-B, grading, drainage, paving, appurtenances precast and steel bridges 2.57 mi. beginning N. of Butterfield Rd. to N. of North Ave. near Bensenville $3,000,000.

Cont. T-6-C, grading, drainage, paving, appurtenances, erecting precast concrete, steel bridges 2.81 mi. beginning at point N. of 31 St. to N. of Butterfield Rd. near Elmhurst, $3,000,000. E. Lionel Pavlo, 173 W. Madison St., Chicago, section engr. CD 5/11.

▲ **O., Cincinnati**—BA 6/4—City, City Hall, Contract 7, Mill Creek Disposal. $7,000,000. Plans deposit $25. CD 3/12.

BUILDINGS—LB & CA

▲ **L. E. Sims & Assocs.**, 3684 Beechgrove Dr., Grove City, O. CA Est. $3,500,000. 233 HOMES in Leawood Gardens Development, Hamilton Rd. and E. Livingston Ave., COLUMBUS, O. Chipley Realty & Development Corp., 3684 Beechgrove Dr., Grove City, O.

▲ **H. B. Layne Contractor, Inc.**, Spinning Rd., Dayton, O., Own Forces, $6,500,000. 700 National HOMES, west edge of Route 35 Expressway, XENIA, O.

▲ **George R. Klein**, 18901 Grand River, Detroit, Mich., Owner Builds. $4,800,000. 160 brick HOMES, Ten-Mile Rd. between Rosewood and Scotia, OAK PARK, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 16 Kansas — May 24, 25 Texas

STREETS AND ROADS

May 14 Iowa — May 24, 25 Texas

▲ **Mo., St. Louis**—LIBRARY—BA 5/23—St. Louis University, Very Rev. Paul C. Reinert, S.J., pres., 221 N. Grand Blvd., 5 story, bsmt., 190x220 ft., brick, steel, concrete, glass Pope Pius XII Memorial Library at south side Lindell Blvd. between Grand Blvd. and Spring Ave. $4,000,000. Extended date. Leo A. Daly Co., Ambassador Bldg., 411 N. Seventh St., Zone 1, archt.-engr. Alfred Morten Githens, 633 N. Columbus Ave., Mount Vernon, N. Y., architectural consultant. CD 4/9.

HEAVY CONSTRUCTION—LB & CA

▲ **S. W. Hardwick**, Beardstown, Ill., CA $1,539,500. Chisholm Creek Diversion, Wichita and Valley Center, Inv. 34-066-57-63, KANSAS. U. S. Eng., Box 61, Tulsa, Okla. Bids Apr. 10.

▲ **NORTH DAKOTA**—State Hy. Dpt., Bismarck, Bids opened 4/26,

N. D.—**Clyde Coman**, Bismarck, N. D., LB $78,469 grading, etc. 13.845 mi. S-784 (2), Grant Co., LB $79,516 grading, etc. 14.95 mi. S-813 (1), Burleigh Co.;

N. D.—**Archie Campbell, Inc.**, New Rockford, N. D., LB $119,919, base bit. 5.797 mi. S-406 (6) and S-424 (1), Williams Co.;

N. D.—**Megarry Bros.**, St. Cloud, Minn., LB $307,494, b. conc. surf. 15.527 mi. F-130 (7) Towner, Benson and Ramsey Counties;

N. D.—**W. H. Noel Co.**, Jamestown, N. D., LB $539,658 base, b. conc. surf. F-519 (1) and F-11 (3), Towner and Cavalier Counties;

N. D.—**The Haggart Constr. Co.**, 403 First Natl. Bank Bldg., Fargo, N. D., LB $535,368, b. conc. 21.618 mi. F-670 (3) Benson and Ramsey Counties;

N. D.—**Art Schimkat**, Pierre, S. D., LB $264,575 tr. serv. grav. 15.402 mi. S-276 (13) Morton and Grant Counties;

N. D.—**Wm. Collins & Sons, Inc.**, 606 Black Bldg., Fargo, N. D., LB $139,453, base, bit. surf. tr. 17.773 mi. S-323 (7) Stutsman Co.;

N. D.—**Kenneth Hulstrand**, Lakota, N. D., LB $195,463 tr. serv. grav. 13.969 mi. S-526 (7) Walsh Co.;

(Continued on page 136)

slips on like

U.S. cast iron **PIPE** FOR WATER, SEWERAGE AND

an old shoe

But once *in*, our revolutionary new "Tyton Joint" pipe seals bottle-tight. Hydrostatic tests on restrained "Tyton Joints" show that they will withstand pressures well in excess of hydrostatic test pressures required by the pipe specifications.

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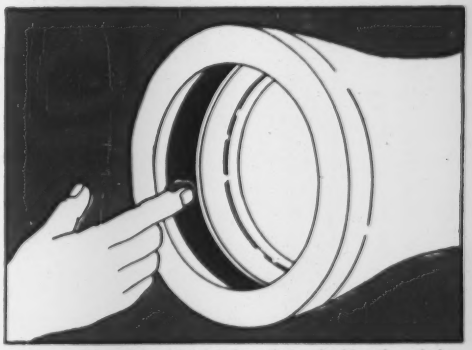
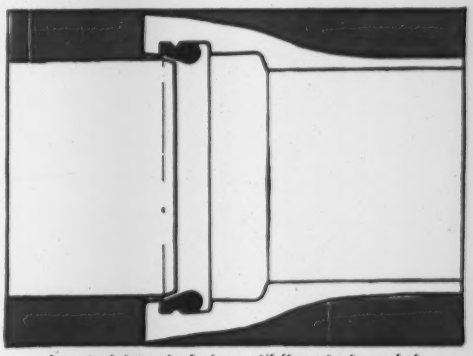
ONLY FOUR SIMPLE ACTIONS

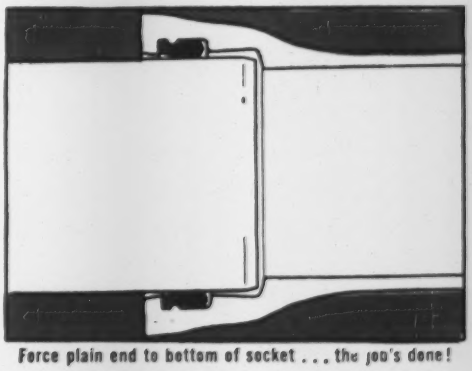
Insert gasket with groove over bead in gasket seat



Wipe a film of special lubricant over inside of gasket



Insert plain end of pipe until it contacts gasket



Force plain end to bottom of socket . . . the job's done!

(Continued from page 133)

N. D.—**Wm. Collins & Son, Inc.**, 606 Black Bldg., **Schultz & Lindsay Constr. Co.**, 320½ Broadway and **Tennefos Constr. Co.**, 62½ Broadway, all Fargo, N. D., LB **$716,119**, grading, etc. 6.469 mi. I-01-8 (5) Barnes Co.;

N. D.—**Schultz & Lindsay Constr. Co.**, 320½ Broadway, Fargo, N. D., LB **$1,741,870** c. conc. and bit. shoulders 14.095 mi. I-02-3 (1) Walsh Co.;

N. D.—**Pasco Constr. Co.**, Sioux Falls, S. D., LB **$406,229** tr. serv. grav. 20.219 mi. F-123 (6) and S-254 (12) Logan and McIntosh Counties. CD 4/11.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**Austin Road Co.**, P. O. Box 1590, Dallas, Tex., CA **$2,505,722**. Conc. pavt., flex. base and surf. shoulders 11.324 mi. hy. US 77, Proj. I 487 (14) Ellis Co.;

Tex—**Trotti & Thomson, Inc.**, P. O. Box 70, Beaumont, Tex., CA **$1,327,871**. shell concrete base and b. conc. 1.075 mi. hy. US 90, Proj. I (8) Orange Co.;

Tex.—**C. H. Harrison Co.**, P. O. Box 185, Waco, Tex., CA **$892,119**. grading, structures 4.366 mi. hy. US 81, Proj. I. 75 (3) & I. 614 (13) Falls and McLennan Counties. Grand total $4,725,713. Bids Apr. 19, awarded Apr. 24, CD 4/25, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**Cage Bros.**, 6959 San Pedro St., San Antonio, Tex., CA **$602,661**. flex. base and one course surface treat. 9.398 mi. hy. US 67 & 377, Proj. F. 580 (12) Comanche Co., CA **$1,926,963**. flex. base and hot mix b. conc. 11.230 mi. hy. 83, Proj. F 90 (13), Taylor Co.;

Tex.—**Dean Word Co.**, P. O. Box 330, New Braunfels, Tex., CA **$1,398,085**. flex. base and hot mix b. conc. 3.370 mi. hy. US 81, Proj. I. 66 (15) Comal Co.;

Tex.—**Texas Bitulithic Co.**, P.O. Box 10365, Dallas, Tex., CA **$1,671,654**. c. conc. 0.826 mi. Hy. US 77, Proj. I. 22 (14), Dallas Co.;

Tex.—**M. E. Ruby, D. B. Denny, Jr. & H. H. Constr. Co.**, P.O. Box 96, San Marcos, Tex., CA **$815,469**. foundation course, flex. base and hot mix b. conc. 12.181 mi. Hy. SH 36 and US 79, Proj. F 222 (7) F. 394 (7), Milam Co.;

Tex.—**Fred Hall & Son & Uvalde Constr. Co.**, P.O. Box 488, Valley Mills, Tex., CA **$670,802**. regrade sect., wid'n. streets, flex. base and hot mix 10.463 mi. Hy. US 77, Proj. F. 622 (8), McLennan Co. Grand total $7,085,634. Bids Apr. 20, awarded Apr. 24. CD 3/26.

▲† **U. S. Eng.**, Box 61, Tulsa 2, Okla., cancelled bids to have been opened May 8, runway, taxiways, aprons, Amarillo Air Force Base, AMARILLO, TEX. Est. **$3,750,000**. CD 4/4.

▲† **Nolan Bros. Contractors, Inc.**, 600 Bailey St., Fort Worth, Tex., LB **$12,307,273**, est. over $3,000,000. runway, taxiways, aprons, overrun and blast pads, Shepherd Air Force Base, ENG-34-066-57-51, WICHITA FALLS, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Apr. 24. CD 3/29.

▲ **WYOMING**—State Hy. Comn., Cheyenne,

Wyo.—**Morrison-Knudsen Co., Inc.**, 319 Broadway Ave., Boise, Idaho, CA **$4,121,149**, est. $4,188,879, select material surf. 3 rein.-con. underpasses in 11.475 mi. and base, plant mix, stone chips and misc. work 17.928 mi. Rock Springs-Rawlins Rd., Proj. I-91-3 (3) Sec. II, grade, Sec. I and II Surf., Sweetwater Co.; CA **$661,122**, est. $642,548, select material surf. 6.453 mi. I-091-3 (3) Sec. I, Sweetwater Co.;

Wyo.—**Knisely-Moore Co.**, Douglas, Wyo., CA **$229,927**, est. $264,284, base, plant mix, stone chips, one rein.-con. slab span bridge 3.076 mi. F-142 (7), Platte Co.; CA **$861,391**, est. $816,623. select material surf. landscaping, irr. sprinkler sys., two 4-span rein.-con. rigid frame interchange structures 0.606 mi. I-223 (17) Unit 1, Laramie Co.;

Wyo.—**Long Constr. Co., Inc.**, Lockwood Flats, Billings, Mont., CA **$846,182**, est. $830,768 grading, draining, storm sewer, comb. curb and gutter c. conc. median base, plant mix stone chips 1.39 mi. F St. Road I-225 (5) Unit I, grading I-225 (6) Sec. I, Natrona Co.;

Wyo.—**Reed Constr. Co.**, 706 W. 19 St., Cheyenne, Wyo., CA **$1,057,999**, est. $1,064,373 base, plant mix, stone chips, comb. curb and gutter, storm sewers, 4.102 mi. F-186 (5) and F-64 (7) Comb; Carbon Co.;

Wyo.—**Asbell Bros. Constr. Co.**, Riverton, Wyo., CA **$469,982**, base, plant mix, stone chips 7.479 mi. F-034-5 (4) Big Horn Co.;

Wyo.—**Max W. Dudley**, Riverton, Wyo., CA **$137,656** est. $164,137, 4 interchange structures, 2 twin-3 cont. rein.-con. slab spans and 2 rein.-con. box underpasses I-091-3 (3) Sect. I and II Sweetwater Co. Grand total $8,375,407. Bids Apr. 24, awarded Apr. 26. CD 4/11.

▲ **NEW MEXICO**—State Hy. Dpt., State Hy. Bldg., Cerrillos Rd., Santa Fe,

N. M.—**Wylie Bros. Contg. Co.**, 6511 Domingo Rd., N.E. Albuquerque, N. M., CA **$1,417,729**, est. $1,873,386. 4-lanes sub-base, base course, hot plant bit. surf. one interchange 8.041 mi. Santa Rosa-west, F.A. Proj. I 093-5 (3), Guadalupe Co.;

N. M.—**Jack Adams**, 768 Cerrillos Rd., Santa Fe, N. M., CA **$1,068,474**, est. $1,372,885. 4-lane base course, hot plant bit. surf. curb and gutter, sidewalk; street lighting, storm sewer interchange with structure, multiple concrete box culvert one 40 ft. span rigid frame bridge 4.588 mi. Lordsburg Urban, F-002-1 (2), Hidalgo Co. Bids Apr. 26. CD 4/17.

BUILDINGS—LB & CA

▲ **Lysne Constr. Co.**, Blooming Prairie, Minn., LB **$1,529,000** (8 bidders) general contract 300x500 ft. Ellis JUNIOR HIGH SCHOOL, AUSTIN, MINN. Bd. Educ., S. L. Coumbe, clk., Austin, Minn. CD 3/27.
Scheid Plumbing & Heating Co., Austin, Minn., LB **$542,452** (5 bidders), plumbing, heating and ventilating work, Ellis Junior High School (Austin, Minn).

▲ **Ringland-Johnson, Inc.**, 820½ Locust St., Des Moines, Iowa, CA **$1,406,447**. Younker MEMORIAL HOSPITAL Addn., DES MOINES, IOWA. Iowa Methodist Hospital, 12 and Pleasant Sts., Des Moines, Iowa. Bids Mar. 14. CD 3/29, under LB.
Conditioned Air Corp., 220 New York St., Des Moines, Iowa, CA **$559,700**. mechanical work for hospital addn. (Des Moines, Iowa).

▲ **Fox Swenson Constr. Co.**, 3305 Terrace St., Kansas City, Mo., CA Est. **$12,000,000**. 520,000 sq. ft. SHOPPING CENTER, 5 main BUILDINGS, KANSAS CITY, MO. Blue Ridge Shopping Center, Inc., U. S. 40 and Blue Ridge, Kansas City, Mo.

▲ **Lippert Bros. Co.**, 2800 North Santa Fe St., Oklahoma City 5, Okla., CA **$1,262,827**. 4 DORMITORIES and utilities, Oklahoma City University, OKLAHOMA CITY, OKLA. Oklahoma City University, 2300 N. Blackwelder St., Oklahoma City, Okla. Awarded Apr. 27. CD 4/25, under LB.

▲ **Refinery Engineering Co.**, Wright Bldg., Tulsa, Okla., CA Over **$4,000,000**. design and construct, Oil REFINERY facilities, WYNNEWOOD, OKLA. Kerr-Mc Ghee Oil Industries, Inc., Kerr-McGhee Bldg., Oklahoma City, Okla. CD 3/12.

▲ **J. M. Hollis Constr. Co.**, 1815 Franklin St., Houston, Tex., CA **$1,000,000**. 40-lane BOWLING ALLEY, HOUSTON, TEX. Miles Strickland, 2801 Louisiana St., Houston, Tex. CD 5/1.

▲ **Samanie Constr. Co.**, 2818 Crockett St., Fort Worth, Tex., CA **$9,000,000**. 27 story OFFICE, HOUSTON, TEX. Southern Enterprises, Inc., c/o San Jacinto Bldg., Houston, Tex. Herman A. Kelling, 3373 Westheimer St., Houston, Tex., archt. CD 11/15.

▲ **Rob H. Smith, Gen. Contr.**, 1915 Kolfahl St., Dallas, Tex., LB **$1,642,780**. est. $15,000,000. general work, SHOPPING CENTER, MESQUITE, TEX. Big Town Co., c/o Wes Fenton, owner, 1006 Davis Bldg., Dallas, Tex. Gerri Von Freilick, developer, 309 Equitable Bldg., Denver, Colo. Shrewsbury-Tharaldson Assocs., 216 Central, Glendale, Calif., designers. CD 3/22.
McClure Electric Co., 2633 Swiss St., Dallas, Tex., LB **$408,000**. electrical work (Mesquite, Tex.)
Kieffer Plb. & Heating Co., 6411 H. Hines Blvd., Dallas, Tex., LB $430,000. mechanicals (Mesquite, Tex.)

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS

May 16 Nevada
May 21 Idaho
May 29, 31, June 5 California

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 4/25,

Calif.—**George Herz & Co.**, P. O. Box 191, San Bernardino, Calif., LB **$123,938**, (12 bidders) surfacing shoulders and central portion of roadway for about 16.6 mi. between 5.1 mi. southerly of Lucerne Valley and Central Rd. in Apple Valley, San Bernardino Co.;

Calif.—**J. E. Haddock Ltd. & Cox Bros. Constr. Co.**, P. O. Box C, Stanton, Calif., LB **$2,570,432**. (8 bidders) grading, paving, 2.3 mi. San Diego Freeway between San Mateo Creek and 0.1 mi. south of Avenida Cadiz to provide a 6 lane divided freeway and constr. 3 overcrossings and 1 undercrossing, San Diego and Orange Counties;

Calif.—**R. E. Hazard Constr. Co. & W. F. Maxwell Co.**, Cabrillo Freeway at Friars Rd., San Diego, Calif., LB **$947,769**, (4 bidders) constr. three interchanges and installing fence on U. S. 101 between 0.7 mi. south of Dairy Mart Rd. and 24th St., in National City, San Diego Co. CD 3/29.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Mercer, Fraser Co., Inc., and Mercer, Fraser Gas Co., 2nd and Commercial Sts., Eureka, Calif., CA **$1,803,911**; grading, surfacing 4.2 mi. 4 lane freeway between 0.5 mi. north of Hilvilla and 0.7 mi. south of Irving Lodge on U. S. 101, Mendocino Co. Awarded Apr. 25. CD 4/12, under LB.

▲† **MacDonald & Kruse**, 7540 Wheatland Ave., Sun Valley, Calif., CA **$3,226,471**. imprv. Walnut Creek inlet channel, Big Dalton Wash to San Gabriel River, ENG-04-353-57-36, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 11, awarded Apr. 19, CD 4/15, under LB.

▲† **E. A. Irish Contr.**, 2944, St., Los Angeles, 39, Calif., CA **$1,670,409**. imprv. Eaton Wash Channel Eaton Dam to Huntington Dr., ENG-04-353-57-29, CALIFORNIA, U. S. ENG., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 16, CD 4/19, under LB.

▲† **Graham & Jensen Constr. Co.**, 1404 W. 20th St., Merced, Calif., LB **$1,234,584**. two 3 story, 16,000 sq. ft. dormitories, and dining hall, ENG-57-130, CASTLE AIR FORCE BASE, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Apr. 26. CD 4/8.

▲† **Connolly-Pacific Co. & T. E. Connolly**, 1925 Water St., Long Beach, Calif. CA **$3,877,711**. subsidence remedial measures, Naval Shipyard, NBy 4182, Spec. 4182/56, LONG BEACH, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Feb. 26, awarded Mar. 21. CD 3/25, under LB.

▲ **W&S Constructors**, 2509 West Rosecrans St., Compton, Calif., CA **$1,013,368**. WW sys., NORCO, CALIF. Norco Community Services Dist., 1731 Park Ave., Norco, Calif. Bids Mar. 13. CD 3/18, under LB. CD 5/9/57

▲† **Stolte, Inc.**, 8451 San Leandro St., Oakland, Calif., LB **$1,331,294**, est. $1,446,745, (5 bidders) Airmen Dormitories No. 4 and No. 7, Dining Hall No. 1, paving and utilities at Mather Air Force Base, Spec. Nos. 2093, 2094, and 2207, ENG-04-167-57-50, SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Apr. 30. CD 4/8.

▲† **Carvers Constr. Co.**, 1870 Lucerne Ave., Stockton, Calif., CA **$1,205,000**, COMMUNICATIONS CENTER BLDG. and BARRACKS BLDGS., at Stockton Naval Base, NBy 9324, STOCKTON, CALIF. Pub. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids Apr. 25. CD 4/4.

BUILDINGS—LB & CA

▲ **Howard Constr.**, 2143 Fardown Ave., Salt Lake City, Utah, LB **$1,080,000**. general contract, Northwest JUNIOR HIGH SCHOOL, SALT LAKE CITY, UTAH. Salt Lake City Bd. Educ., 440 East First South St., Salt Lake City, Utah. Bids Apr. 23. CD 4/2.

▲ **The Austin Co.**, 16112 Euclid Ave., Cleveland, O., CA **$3,500,000**. DELIVERY CENTER for Model 707 transport planes with shop and office and storage and delivery area, SEATTLE, WASH. Boeing Airplane Co., 7755 E. Marginal Way, Seattle 4, Wash. CD 1/15.

▲ **School Dist. No. 16-C**, Pendleton, Ore., rejected bids Apr. 2, SENIOR HIGH SCHOOL, PENDLETON, ORE. LB **$2,094,361**. Will re-advertise. CD 4/9, under LB.

▲ **Fred S. Macomber & The Brunzell Constr. Co.**, 8818 Melrose Ave., Los Angeles, Calif., CA **$1,369,677**, 81,000 sq. ft., 2 story, brick, rein.-con. LIBRARY, FRESNO, CALIF. Fresno Co., Court House, Fresno, Calif. Bids Apr. 16. CD 4/19, under LB.

▲ **Group of San Francisco Investors**, c/o J. F. Jacobson, realtor, 4085 N. Safford Ave., Fresno, Calif. Owner Builds. **$5,000,000**. 500 unit MOTEL, CONVENTION HALL AND HELIPORT, FRESNO, CALIF. Howard Schroder, Mason Bldg., Fresno, Calif., archt. CD 4/19.

▲ **O. E. Anderson Constr. Co.**, 1075 N. 10th St., San Jose, Calif., CA **$2,805,320**; rein.-con. frame TENNYSON HIGH SCHOOL, incl. 40 classrooms, gymnasium, near HAYWARD, CALIF. Hayward Union High School Dist., c/o Supt., 22300 Foothill Blvd., Hayward, Calif. Bids Apr. 3. CD 4/9, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS

May 15 Ontario

BUILDINGS—BA

▲ **Ont., Toronto**—POWER PLANT SUPERSTRUCTURE—BA 6/3—Hydro-Electric Power Comn. of Ontario, 620 University Ave., (invited bidders) Unit 5 superstructure in connection with steam electric power plant exten. Unwin Ave. near Leslie St., harborfront. Stone & Webster Canada Ltd. 44 King St. W., engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **Majestic Contractors, Ltd.**, 405 Royal Trust Bldg., Edmonton, Alta., LB **$3,036,080**, Sect. A, gas pipe line construction, Port Artur, ONTARIO. Northern Ontario Pipe Line Crown Corp., 56 Lyon St., Ottawa, Ont.;
Morrison Shivers Co., Ltd., Leaside, Toronto, Ont., LB **$4,467,015**, Sect. B, gas pipe line (Ontario).
Houston Contg. Ltd., Winnipeg, Man., LB **$6,977,250** Sect. C and D, gas pipe line (Ontario).

▲ **Fabi & Fils Ltee**, 800 King St. E., Sherbrooks, Que. CA **$1,717,000**. paving and certain works, SHERBROOKE, QUE. City, City Hall, Sherbrooke, Que. Awarded Apr. 24.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲† **Swalling Constr. Co. & Patti-MacDonald**, Anchorage, Alaska, and **M-B Contracting Co.**, Lloyd Bldg., Seattle 1, Wash., LB **$4,386,000**, est. $4,040,000 (3 bidders) petroleum handlings and storage facilities, incl. constr. pier, underground tanks, bldgs. roads and utilities, Sects. 2419/56; ADAK, ALASKA P. Wks. Officer, 17th Naval Dist., 215 W. Harrison St., Seattle, Wash. Bids Apr. 25. CD 3/29.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Procon Ltd.**, 1111 Mt. Prospect St., Des Plaines, Ill., U. S. A. CA Approx. **$4,500,000**. design and construct REFINERY, incl crude-distillation and thermal cracking unit, LA LIBERTAD, ECUADOR, Anglo-Ecuadorian Oilfields, Inc., La Libertad, Ecuador. Universal Oil Products Ltd., 30 Algonquin Rd., Des Plaines, Ill., U. S. A., archts.

AMERICANS ABROAD

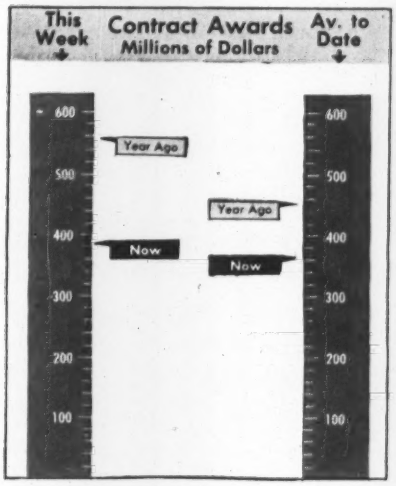
HEAVY CONSTRUCTION—LB & CA

▲† **Johnson, Drake & Piper International Corp.**, 111 Fourth Ave., New York 3, N. Y., U. S. A., and **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York 16, N. Y., U. S. A., LB Sch. A, **$4,044,267** and Sch. B, **$2,900,355** (2 bidders) air base building and utilities at Goose Air Force Base, ENG-30-347-57-20, GOOSE BAY, LABRADOR. U. S. Eng., Eastern Ocean Dist., 346 Broadway, New York 13, N. Y., U. S. A. Bids Apr. 30. CD 4/9.

(Proposal Advertisement see pp. 149 to 152)

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 19 wks 1957	Chge %
	millions		
Federal	$33.2	$1,094.6	+67
State and Municipal	140.4	2,529.7	+10
Total Public	173.6	3,624.3	+23
Total Private	211.6	3,264.3	−42
U. S. Total	$385.2	$6,888.6	−20
By Type of Work			
Waterworks	$13.0	$119.6	+9
Sewerage	4.8	154.9	−34
Bridges	6.8	262.9	+22
Highways	71.6	1,052.6	+26
Earthwork, Waterways	14.2	481.3	+85
Buildings:			
Public, Excl. Housg.	34.2	804.8	+12
Public Housing	10.1	266.3	+83
Private Housing	44.8	1,103.9	−53
Commercial	56.2	666.9	−9
Industrial	104.7	1,293.7	−42
Unclassified	24.8	681.7	−4
U. S. Total	$385.2	$6,888.6	−20

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

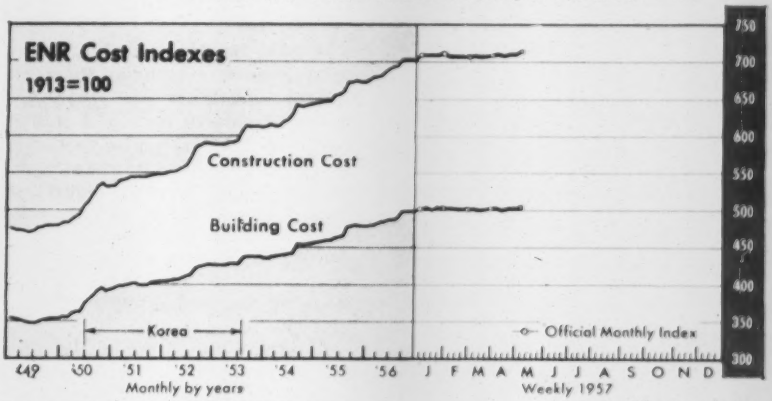
	Week of May 2	Cum. 18 wks 1957	Chge '56-'57 %
	millions		
Corporate Securities	$56.7	$2,238.1	+69
State and Municipal:			
All Except Housing	114.1	2,012.3	+27
Housing	...	41.5	+104
Federal Loans	18.6	80.5	+109
Federal Aid	...	...	...
Total Nonfederal	$189.4	$4,372.4	+47
Federal Appropriations:			
In U. S.	...	...	−100
Outside U. S.	...	...	...
Total New Capital	$189.4	$4,372.4	+46

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of May 2 1957	% Change from April 4 1957	% Change from May 3 1956
Construction Cost	715.70*	+0.7	+4.0
Building Cost	503.01*	+0.3	+3.2

*Official Monthly Index for May, 1957.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518



WAGE RATES, 20-cities' average	May 1957	% Change from April 1957	% Change from May 1956
Common	$2.256	+1.4	+5.0
Skilled (average three building trades)	3.488	+0.6	+4.4
Bricklayers	3.751	+0.5	+3.9
Structural Ironworkers	3.477	+0.6	+4.8
Carpenters	3.236	+0.8	+4.5
Equipment operators (average three types)	3.119*	+0.4**	+3.3*

* April ** March

MATERIAL PRICES, 20-cities' average			
Structural Steel (average 3 mills), per cwt	$5.000	0	+8.7
Lumber, 2x4 Fir, per M fbm	115.555	+0.1	−5.9
Lumber, 2x4 Pine, per M fbm	101.933	+0.4	−2.2
Cement, bulk, per bbl	3.915	+0.3	+5.8
Sand, per ton	2.450	0	+1.8
Ready-mixed concrete, per cu yd	13.568	+0.3	+3.2
Gypsum sheathing, ½"x2'x8' per Msf*	62.978	0	+1.0
Fiber board sheathing, ½" sq. ed. per Msf*	71.739	+0.2	+2.7
Mineral wool insulation, 3' batts, per Msf*	71.711	0	−1.4
Crushed stone, 1½", per ton, CL	2.818	+0.2	+1.6
Concrete blocks, sand gravel, 8"x8"x16", each*	0.226	−0.4	+1.3
	April 1957	March 1957	April 1956
Brick, common, per M*	37.425	+0.1	+3.2
Lime, hydrated finishing, per ton, CL	36.170	+0.2	+6.5
Structural clay tile, 3x12x12", per M, 2000 up*	178.685	0	+3.2
Vitrified clay sewer pipe, std. 12", per ft	1.323	+0.8	+7.3
Concrete sewer pipe, 12", per ft*	1.151	+0.4	+6.7

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost 1913 = 100	Construction Cost 1949 = 100	Building Cost 1913 = 100	Building Cost 1949 = 100	Volume 1913 = 100	Volume 1949 = 100
1956						
May	688.43	144.32	487.36	138.54	684	198
June	692.13	145.09	488.70	138.92	636	184
July	694.75	145.64	489.23	139.07	740	214
Aug	696.31	145.97	491.22	139.63	583	168
Sept	704.91	147.77	500.10	142.16	580	168
Oct	703.88	147.56	499.54	142.00	729	211
Nov	704.13	147.61	500.48	142.27	542	157
Dec	703.82	147.55	500.17	142.18	624	180
1956 Average	**692.37**	**145.14**	**490.76**	**139.50**	**671**	**194**
1957						
Jan	707.90	148.40	501.96	142.69	504	146
Feb	710.06	148.85	502.59	142.87	546	158
Mar	708.64	148.56	501.37	142.52	553	160
April	709.30	148.69	501.37	142.52	564	163
May	715.70	150.04	503.01	142.99		

Private Awards Score April Upturn

The anticipated upturn in private construction contracts materialized in April.

Private awards for heavy construction, as reported to ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY, totaled $732 million, surging 20% ahead of March.

But, the upturn in private work was offset by a drop in contracts for public works. As a result, total heavy construction contracts in April slipped to $1.46 billion, falling below both January and March of this year.

Total awards for the month of April were well below the high level of April 1956, but ahead of the same month in 1955.

In the private construction field, industrial building made the best comeback in April, jumping 77% from the low $162.5 million in March to $287.2 million in April.

Industrial building also became the first type of construction to reach the $1 billion mark in awards this year. But, industrial building still has a long way to go before it can match the 1956 volume. Cumulative industrial building contracts through April trailed the comparable 1956 period by 41%.

Private unclassified projects also made a sharp gain from March to April. Awards for this type of work totaled $15 million in March but shot up to $23.9 million last month. (Private unclassified includes such projects as transmission lines, pipelines, utilities' construction and private airport work.)

• **Housing improves**—Awards for private mass housing continued their March upturn. Contracts rose from $244.8 million in March to $255.1 million in April. But, for the year to date, this category still reflects its varied troubles, such as tight mortgage money, rising land costs and higher construction costs. For the January through April period this year, private mass housing awards total $978.8 million, down 55% from the comparable four month period in 1956.

Contract awards for public projects fell below March levels for every type of construction except bridges and public buildings (other than public housing). This was not surprising, however, because public works activity was unusually strong in March. On a year to year basis, last month's public works contracts moved well ahead of April 1956 with only three exceptions—waterworks, sewerage and earthwork projects.

Public works continues to be strong this year. Awards for the first four months totaled $3.1 billion, up 21% over the same period in 1956.

• **Regional breakdown**—The area West of the Mississippi took top honors for public awards last month. Sparked by highways, the region rolled up $150.8 million in public contracts.

With strong assists from highways, public housing and other public buildings, the Middle Atlantic region came close to the West of the Mississippi area in public works volume, and led all other regions in private work.

Costs Set Record

Wage hikes key factor as ENR indexes hit new high

Wage increases in five key cities and scattered price increases for lumber and cement pushed construction costs to record highs this month, as measured by the ENR 20-cities cost indexes.

ENR's Construction Cost Index climbed six points to a new record of 715.70 (1913 = 100). This was a rise of 0.7% for the month. The index is now 4% above a year ago.

The Building Cost Index advanced two points to an all-time high of 503.01 (also based on 1913 = 100). This represented an increase of 0.3% during the month. This index is 3.2% higher than it was a year ago and it's just

Engineering Construction Contracts—April '57

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000.

Four Weeks · Thousands of Dollars (000 Omitted)

	April, 1957							U. S. Cumulative Four Months		% Change	Canada April
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1957	1956	'56 to '57	1957
Public Works											
Waterworks	644	1,629	1,484	2,219	4,132	5,741	15,849	103,347	100,261	+ 3	1,295
Sewerage	750	5,306	4,297	8,946	6,555	6,173	32,027	136,063	215,253	−37	7,581
Bridges	3,548	13,104	6,948	21,650	15,218	8,623	69,091	238,929	192,759	+24	3,283
Earthwork and waterways	4,897	5,451	2,616	771	14,190	6,326	34,251	347,566	215,009	+62	32,390
Streets and roads	8,473	33,901	46,329	47,678	59,005	26,812	222,198	923,011	739,481	+25	5,967
Public buildings, residential	344	35,376	4,579	7,953	3,150		51,402	230,770	132,032	+75	12,153
Other public buildings	10,974	36,758	37,389	32,669	27,005	45,635	190,430	727,681	614,136	+18	26,586
Unclassified	3,908	15,968	32,957	6,666	21,552	32,039	113,090	440,890	397,730	+11	6,605
Total public	33,538	147,493	136,599	128,552	150,807	131,349	728,338	3,148,257	2,611,661	+21	95,860
Federal government (included in above classifications)	11,805	39,862	42,763	6,956	40,003	43,187	184,576	895,202	578,661	+55	14,797
Private											
Bridges								1,220	806	+51	
Industrial buildings	47,335	47,153	11,540	86,511	69,790	24,922	287,251	1,141,452	1,922,844	−41	39,872
Mass housing	15,635	142,816	5,898	44,794	17,722	28,269	255,134	978,796	2,161,567	−55	8,190
Commercial buildings	23,976	55,663	13,135	35,641	18,242	18,818	165,475	573,402	673,616	−15	10,965
Unclassified	1,494	4,494	2,237	920	11,284	3,492	23,921	184,319	251,469	−27	9,992
Total private	88,440	250,126	32,810	167,866	117,038	75,501	731,781	2,879,189	5,010,302	−43	69,019
Total Engineering Construction:											
April, 1957—4 weeks	121,978	397,619	169,409	296,418	267,845	206,850	1,460,119				164,879
March, 1957—4 weeks	62,443	414,867	194,090	220,811	351,382	223,982	1,467,575				121,959
April, 1956—4 weeks	79,197	326,819	193,317	505,373	437,262	326,732	1,868,700				159,212
Four Months—1957	381,663	1,489,931	753,736	1,213,421	1,089,705	1,098,990		6,027,446		−21	557,344
Four Months—1956	447,680	2,206,635	713,886	1,489,404	1,733,094	1,031,264			7,621,963		626,990
% Change '56 to '57	−15	−32	+6	−19	−37	+7					−11

slightly above the previous high of 502.62, reached in January.

Substantial wage increases were primarily responsible for the latest rise in costs. Common laborers won raises ranging from 10 cents to 17.5 cents an hour in four cities, and 5 cents per hour in New Orleans. The biggest increase came in Cleveland where the increase was 17.5 cents an hour for laborers on heavy construction and 16.5 cents an hour for laborers on building construction.

In Kansas City, common laborers on heavy construction received an increase of 13.5 cents an hour and laborers on building construction received a pay hike of 10 cents. Philadelphia common laborers won a 15 cent an hour increase both for heavy construction and building. And, in St. Louis, both groups won a 12.5 cent an hour boost.

Skilled trades also won some substantial pay increases. In Cleveland, bricklayers, carpenters and structural ironworkers all won boosts of 16.5 cents an hour. Los Angeles bricklayers picked up an additional 10 cents an hour. New Orleans bricklayers and carpenters received another 7.5 cents an hour; structural ironworkers in New Orleans won 10 cents an hour more. Philadelphia carpenters gained 14 cents an hour. St Louis carpenters and structural ironworkers received an additional 12.5 cents.

Moderate increases in lumber prices were reported in Boston, Chicago, Cincinnati and St. Louis. These increases more than offset price reductions in Minneapolis and San Francisco.

Cement prices went up in one city, Cincinnati, where a comparatively heavy increase—24 cents a barrel—was posted. It was the first cement price increase during the second quarter for any major city west of Pennsylvania.

Construction Markets

Charleston, W. Va.: An On the Spot Report

A long overdue boulevard is changing the face of Charleston, West Virginia.

The project is a four lane divided highway sweeping along the south bank of the Kanawha River, which bisects the city. This roal will run parallel to a similar route on the north side of the city. It's being built by the State Road Commission at a cost of more than $4 million.

(Preliminary stages of this highway project will cost $2.7 million, but the State Road Commission plans a later expansion.)

But, the new highway is only part of the Charleston construction story. Along the path of the proposed route, a handsome new waterfront is emerging. Already completed and occupied is the large United Fuel Gas Building, a buff and blue giant that dominates a site opposite the state capital building.

A multi-million dollar Chesapeake and Potomac Telephone Co. headquarters will be built nearby. And, on the hills overlooking the new route, a large Technical Center is being built by Union Carbide Corp. When completed, the center will be one of the most modern research and development centers of its type.

Other riverfront projects are in the speculative stage.

It is appropriate that a highway project is in the center of Charleston's construction activity. Roadbuilding today is the hottest topic in West Virginia construction circles.

One reason for the interest in roadbuilding is that the state has received blunt criticism for lack of progress in the new federal aid program.

When John A. Volpe was serving as temporary administrator of the federal aid highway program earlier this year, he told a meeting of the Associated General Contractors of West Virginia that the state probably was the worst in the nation in getting its federal aid work under way.

And, many in the industry are watching the new governor, Cecil H. Underwood, to see if he will redeem a campaign pledge to reform the state road commission in an attempt to speed up the state's highway program.

Route selection has been a bugaboo for the state and for Charleston. There has been a controversy over plans to relocate U. S. 60, the area's principal through highway. On the basis of an aerial survey, a new route was recommended that would pass a dozen miles north of Charleston. But the city's businessmen and some officials are fighting the proposal. Instead, they seek a throughway on the city's northern outskirts with cloverleafs providing access from the route to downtown Charleston. Until the dispute is settled, contracts are not being let. The governor has endorsed a route that would bisect Charleston. The best possibility now seems to be abandonment of the proposed bypass route.

On Charleston's industrial front, Union Carbide is setting the pace with its technical center but the expansion theme is echoed by virtually every chemical plant in the Kanawha Valley.

Public works aren't being neglected. An $11 million sewer system for Charleston is half completed; additional contracts will be let soon. And, a civic center is being built in the downtown section.

Of all types of construction in Charleston, only homebuilding is lagging. Housing starts are down; home financing generally is difficult to obtain.

Surety Is Liable

Welfare funds must be paid as well as wages when firm goes broke

The U.S. Supreme Court has ruled that union welfare fund payments must be included in the protection given laborers on government construction projects under the 1935 Miller Act.

The Miller Act requires construction companies with federal building contracts of over $2,000 to furnish a bond, guaranteeing payment for all labor and material used in the work. In 1952, the Carter Construction Co. posted such a bond on construction contracts at Travis Air Force Base and Mather Field in California. Surety on the bond was Hartford Accident and Indemnity Co.

The construction firm hired workers under a collective-bargaining contract negotiated between the Associated General Contractors and the AFL-CIO hod carriers union, covering construction industry employment in 46 northern California counties. The contract required specified hourly wages and additional payment of 7½ cents per hour of work to the trustees of a health and welfare fund established for the benefit of construction workers.

Though all hourly wages were paid, the Carter company became insolvent and unable to make its health and welfare fund contributions for three

Muck 30 feet deep where a road must go!

...BUT GERKE AND CITIES SERVICE KEEP THE JOB ON SCHEDULE

North of Ladysmith, Wisconsin, Route 27 was practically floating in the swampland it cut through.

To Lawrence Gerke—sometimes known as "Gerke from Merrill"—went the difficult repair job. A job that involved working in a virtual lake, with muck and water up to 30 feet deep!

Under these conditions it would seem almost impossible not to fall behind the three-month schedule for completion . . . but "impossible" isn't in Gerke's vocabulary. And so, he pulled the job through, directly on schedule.

"But I couldn't have done it without the flawless performance of Cities Service lubricants," says the quiet man from Merrill. "Throughout the rugged months of work in muck and marsh, my equipment operated constantly without a single lubrication failure, thanks to Cities Service C-500 Motor Oil and Trojan Greases. When the chips are down, Cities Service comes through."

Mr. Gerke puts it in a nutshell. You can always count on Cities Service when the chips are down. But why wait until then? Why not start using Cities Service lubricants this week? A Cities Service Lubrication Engineer will gladly help you select the precise type for your equipment. Or, if you'd like more information, write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

"Gerke from Merrill" is the way Lawrence Gerke likes to be known. But he's better known for getting things done . . . and he uses Cities Service lubricants for the same purpose.

200,000 Yards of Borrow Dirt fill marsh where 100,000 yds. of muck were removed. Despite grueling work and tight schedule, Gerke finished on time . . . without a lubrication failure!

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

months of 1953. The trustees of the fund brought suit on the Miller Act payment bond against the Hartford Accident and Indemnity Co. for the unpaid contributions.

The Hartford Co., as surety, won a lower court ruling that the fund contributions were not covered by the Miller Act and hence it was not liable for the payments.

But Supreme Court Justice Harold Burton, in a unanimous opinion, says, "the act . . . does not limit recovery on the statutory bond to 'wages'." According to Burton, "the unpaid contributions were a part of the compensation for the work to be done by Carter's employees. . . . Not until the required contributions have been made will Carter's employees have been 'paid in full' for their labor in accordance with the collective-bargaining agreements."

Final Major Award Made For New Orleans Bridge

The last major contract for construction of the $1.3 million toll plaza for the Greater New Orleans Bridge was signed late in April by the Mississippi River Bridge Authority. Only three minor contracts—toll plaza connections with the main bridge, some paving on the bridge and under-structure treatment—remain to be awarded on the $65 million project.

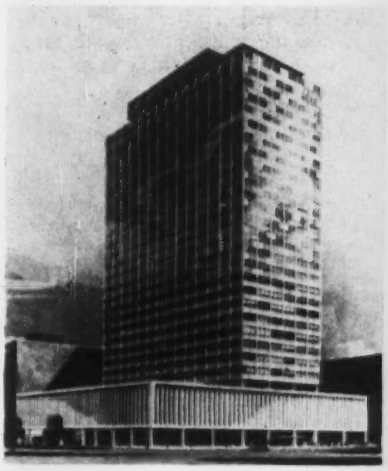
Keller Construction Co. received the latest contract, for construction of the Bridge Authority's administration building and an inflammables building in the toll plaza.

Meanwhile, Neville Levy, Bridge Authority Chairman, said steel work has been resumed on both sides of the river on the deck truss spans, after a stoppage due to shortage of steel. "Most of the steel to finish the deck truss spans is either on the site or on route," Mr. Levy reports. "From now on, work on the deck spans (there are five on the east and three on the west bank) will be a continuing process." The opening date for the bridge is still scheduled for March of 1958.

Delaware to Aid Cities In Their Highway Work

With the signature of Gov. J. Caleb Boggs, Delaware's municipal-aid street fund bill became law late in April. It makes possible distribution of $1.2 million to incorporated communities for road work.

Distribution of the money will begin July 1. Funds for the distribution are to come from proceeds of the 5 cents a gallon motor fuel tax imposed by the state.



Skyscraper Planned

Construction will be started later this year on this 30 story, $7 million office building in Cincinnati, Ohio. It will be the city's third tallest building.

The 335,000 sq ft building will have a 400 car self-park garage, a restuarant and retail stores. The Kroger Co., a food chain, will occupy 75,000 ft of office space, as the building's principal tenant. Hedrick & Stanley, of Fort Worth, Texas, designed the structure for the owner, Milner Enterprises, Inc., of Jackson, Miss.

$8 Million Bond Sale Ends Threat to State Road Plans

The Colorado Highway Commission has successfully marketed an $8 million bond issue and averted a threat to the state's roadbuilding program.

The bonds first were offered in January but no bids were received because a state law at that time limited the maximum interest rate to 2.5%. Later, the legislature raised the maximum allowable interest rate to 3.75%. The higher rate attracted investment bankers who had shunned the January offering.

At one point, there was a fear that the state would have to curtail virtually all of its roadbuilding program because of the financing problem. To help Colorado, the federal Bureau of Public Roads advanced nearly $5 million to the state to keep the highway program alive.

The $8 million worth of bonds, which were sold at an average interest rate of 3.22%, will be retired with highway department revenues. The issue is the second to be sold since voters approved an overall $35 million anticipation warrant program to finance highway work. There is a limitation of $8 million per year on issuance of the bonds.

The bonds were purchased by a syndicate of 22 investment firms headed by First Boston Corp., of New York City.

Urban Building Permits Set First Quarter Record

Building permit valuations in 217 cities set a new record in the first quarter of 1957, according to figures compiled by Dun & Bradstreet, Inc. Total value was $1.39 billion, 1.7% higher than last year.

The first quarter gain was due entirely to a sharp rise in March building permits, which offset declines in January and February.

March permit valuation jumped 25.4% above February, to reach $544 million, and was 8.1% higher than March of last year.

Two regions reported substantial increases in building permit valuations in March of this year as compared to March 1956. New England's dollar value of permits was up 91% on this year to year basis while the Middle Atlantic region showed a 37% increase.

A 17% gain was posted by the East Central region while the Mountain States held almost even with the year ago figures.

Declines came in three areas. The West Central area permits were down 23% from the March 1956 figures; the South Atlantic region was down 12%; and the South Central, down 10%.

Funds for City Road Work Cut by Michigan Governor

Michigan cities and counties said their highway programs were in a state of confusion last week, as Gov. G. Mennen Williams withdrew his approval of a House plan to revise the state gasoline tax distribution formula.

The governor's stand came as a blow to cities and counties that had been counting on an extra $12 million under the new formula. Governor Williams objected to the plan as proposed in the state house because he said "it shorted the state trunkline construction program."

The governor indicated that he would go along with a formula that would give the state 47.5% of all highway revenues of roughly $6 million for distribution to the counties and the cities.

At the same time, the Michigan Senate gave tentative approval to a bill that would earmark up to $3 million of state gasoline tax funds, to back proposed toll highway revenue bonds of the Michigan Turnpike Authority. The proposed turnpike would connect the

Detroit Expressway at the junction with a highway linking up with the Detroit-Toledo Freeway to Dearborn and River Rouge Park, pass Pontiac and then bend south of Flint to connect with a superhighway being built between Denton and Clio.

Aid Promised

New York to get federal funds for urban renewal

New York City, which has been seeking $60 million in federal funds for large-scale urban redevelopment and slum clearance projects, last week settled for half a loaf.

An acrimonious dispute between Albert M. Cole, Federal Housing and Home Finance Administrator, and Robert M. Moses, chairman of the City's Committee on Slum Clearance, ended with a promise of more federal aid to the city, probably as much as $30.5 million between now and June 30, 1958.

The compromise is based on a promise by HHFA chief Albert Cole that the federal government will allocate to the city $5.5 million of the limited agency funds still uncommitted for the fiscal year ending June 30, as well as 10% of any amount that Congress votes for the next fiscal year. Since Congressional action to date indicates an appropriation of $250 million will be voted for the nation for fiscal 1958, New York can expect to get $25 million.

• **First things first**—Mr. Cole tied some strings to his offer. He specified that the funds for fiscal year 1958, presumably $25 million, first must be used to cover probable cost increase in amounts originally set aside for 17 city projects for which the federal government already has reserved funds. This limits the number of new projects that can be planned in the next year.

Mr. Moses is expected to use the first $5.5 million from this year's federal funds for the Lincoln Square urban renewal project, which will be the nation's largest. This $5.5 million would bring the total federal authorization for this project to $30 million. Mr. Moses had requested $42 million. The lower figure may mean abandonment of the six commercial theaters planned for the project (ENR Feb. 7, p. 17).

The total cost of Lincoln Square has risen twice since the project first received federal funds for preliminary planning in May 1955. At that time, total development, including the federal and state contributions as well as the private financing, would add up to about $75 million. In January 1956, the size of the project was more than doubled, to an estimated $160 million, covering a 50 acre tract (ENR Jan. 19, 1956, p. 110). Recent estimates placed the total valuation at about $228 million.

• **Philadelphia project advances**—Meanwhile, the Philadelphia City Planning Commission last week approved the first neighborhood redevelopment project under the "New Approach to Urban Renewal" prepared by development coordinator William L. Rafsky.

The commission approved the $1.5 million Morton development in the Germantown section of the city.

Mr. Rafsky's "New Approach" calls for abandonment of the seven-year-old city practice of first clearing the most seriously blighted areas. Instead, the city will concentrate its resources first in the areas of early blight and move gradually to more seriously deteriorated areas that must be almost completely cleared and rebuilt.

Over the next five years, Mr. Rafsky hopes that $60 million in federal and local funds will be available.

Sewage System Financed On Use-Assessment Base

A $2.1 million sewage collection and treatment system in Defiance, Ohio, that went into full operation this month, is being financed half from city-wide property assessment and half from water consumption charges. Defiance is the first Ohio city to utilize the assessment base in conjunction with a commodity charge.

The financial formula classifies 50% of the project as a civic improvement and called for taxing 6,700 parcels of land according to benefits received. Both revenue and general obligation bonds were sold to obtain the necessary construction monies.

The project consists of 15 miles of interceptor sewers, constructed at a cost of $1.2 million, and a primary treatment plant with sludge digestors and drying beds costing $950,000. The plant is situated on the Maumee River, which flows into Lake Erie.

Finkbeiner, Pettis & Strout, Toledo, Ohio, were the engineers. Louis J. Reimer was employed by the city as financial consultant.

Middle West Leads Nation in Road Awards

The Middle West is leading all other regions in highway and bridge awards for the first four months of this year.

Highway and bridge contracts in the Middle West through April total $311.2 million, up 219% over the comparable 1956 period. Of the total, highway awards account for $231 million, up 87% over the first four months of 1956, while bridge awards, on the same basis, are up 327% to $80.1 million.

Runner up in the highway derby this year is the West of the Mississippi region with bridge and highway contracts totaling $251.6 million, up 5% over the same four months last year.

The comparatively small increase in combined highway and bridge award totals for the West of Mississippi region is due to the fact that highway contracts are down 3% from last year, although totaling a substantial $200.4 million. Bridge awards, totaling $51.2 million, were up 53% over the same period last year.

The Middle Atlantic region has shaped up as a good construction market this year for contractors active in the highway and bridge fields. Awards for the first four months total $237.6 million, nearly double last year's comparable total. Road awards of $192.1 million are 110% ahead of the same period in 1956.

Only the New England states currently are lagging behind last year in awarding bridge and highway contracts.

Highway & Bridge Contracts—First Four Months '57

As reported by ENR in millions of dollars

Region	Highways Value	Highways % Chg. fr '56	Bridges Value	Bridges % Chg. fr '56	Total Value	Total % Chg. fr '56
Total U.S.	$923.0	+ 25	$238.9	+ 24	$1,161.9	+ 25
New England	45.0	— 69	10.8	— 78	55.7	— 71
Middle Atlantic	192.1	+110	45.5	+ 36	237.6	+ 90
South	146.3	+ 42	25.5	— 2	171.8	+ 33
Middle West	231.0	+ 87	80.1	+327	311.2	+219
West of Mississippi	200.4	— 3	51.2	+ 53	251.6	+ 5
Far West	108.2	+ 52	25.8	— 21	134.0	+ 29

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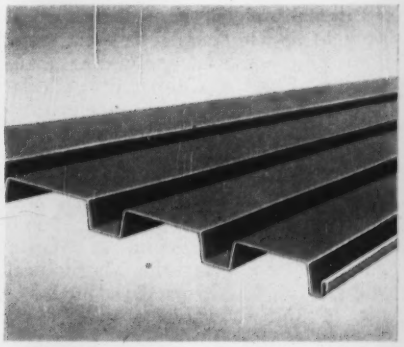

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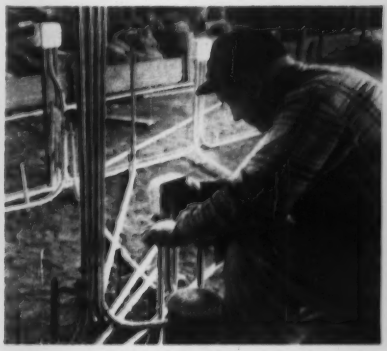

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Wage Negotiations Grow Tense

Strikes stall millions of dollars worth of construction as settlements continue the year's longer-term pattern

Wage talks in the construction industry turned grim and tense last week. New stalemates developed, old ones tightened, new ones threatened. At week's end, impasses between labor and management had dragged to a halt work on a multi-million dollars worth of new construction scattered across the nation.

Rhode Island, New York, New Jersey, Maryland, Florida, Illinois, Michigan, Colorado—the list of trouble spots was long and threw into eclipse a host of settlements amicably reached.

• **Deadlocks**—In Baltimore, Md.—one of the areas hardest hit—a strike of 9,000 construction workers moved into its fifth week as negotiations came to a standstill. Although electrical workers had settled for 12½ cents in wages and 7½ cents in health and welfare under a one-year contract, other trades still held out, with carpenters, cement finishers and laborers last week rejecting wage boost offers ranging from 15 to 25 cents in two-year contracts.

Up the Eastern Seaboard, 700 carpenters in Providence, R. I., disrupted $20 million worth of projects by a strike (without picketing) to enforce demands for 52½ cent package increase under a three-year contract, and painters threatened to strike this week—they want at least the 45 cent wage boost the laborers recently won in a three-year contract. In New York City, a strike of building wreckers, who rejected an offer of 40 cents in a two-year contract, tied up 80 demolition projects. And in New Jersey's Middlesex and Orange Counties, some $100 million worth of new construction came to a standstill as laborers left their jobs after demanding hourly wage and fringe benefit boosts reportedly in the vicinity of 75 cents each.

Meanwhile, in Detroit, Mich., boilermakers in Local 169 struck for the first time in 35 years; they are asking the Powerhouse Contractors Association for a minimum of 30 cents, including 10 cents for a vacation fund. In Illinois, Peoria sheetmetal workers have left their jobs and iron workers may follow suit; strikes are threatened by carpenters in Decatur and laborers in Pekin; demands range up to 45 cents and both two and three-year contracts are under consideration. All highway construction and repairs ran the risk of being halted throughout Ohio as excavating and building material drivers prepared to strike—a 15 cent wage boost was generally agreed upon but the hitch came in classifications and higher pay for tandem truck drivers.

Since mid-April, a plumbers' strike has plagued construction in Miami, Fla. And the union was last week reporting some success in breaking the employer association's solid front with two-year, 27 cent contracts with several members and independents.

In Denver, Colo., most construction, including Webb & Knapp's multi-million-dollar Court House Square project, was stymied by a cement masons' strike without pickets. Individual settlements with some 65 firms, however, was claimed by the union.

• **Internal problems**—And this situation brought quick complaints from local contractors—Associated Building Contractors, Cement Contractors Association, and Light, Heavy Contractors Association, who were bitterest over settlements by out-of-state firms that "don't give a darn about the economy of Denver." Principal criticism was aimed at George A. Fuller Co., prime contractor on the Glenn L. Martin guided missile plant—the Martin deal will give workers retroactively the benefits of the industry contract when reached.

On the other side of the fence, some union groups were having their own troubles. In Washington, D. C., the Carpenters District Council was being picketed by one of its own affiliates—Local 2311 of the piledrivers, who had wanted to negotiate on their own and who apparently didn't like the master contract concluded by the Council. The new two-year contract with Construction Contractors Council provides for a 27½ cent wage boost in 12½ and 15 cent steps.

• **Brighter sides**—On the brighter side, Associated General Contractors of St. Louis, Mo., looked forward to "labor peace and stabilization" for commercial construction as it concluded three-year contracts for 10,000 workers in the carpenters, iron workers and laborers unions. Carpenters and laborers will get an over-all boost of 47½ cents in wages and 2½ cents more for welfare; for the iron workers, it's 50 cents in wages.

In Detroit, contracts (still to be ratified) were tentatively concluded with the carpenters (42½ cents over two years), and the laborers (a package increase of 18 cents). Laborers in Quincy, Ill. settled for 30 cents (20 and 10) in a two-year contract, and bricklayers, laborers and carpenters wound up their negotiations in several New Jersey counties with increases ranging from 10 to 30 cents in one year contracts and up to 40 cents in a two-year contract.

And in southern Idaho, the Associated General Contractors have reached their first settlement—a 32-month contract with laborers at a total cost of 45 cents payable in five installments.

Jobless Insurance

Bill to hike contractors' payments is vetoed in N.Y.

New York State construction firms were spared additional operating costs last week when Governor Harriman vetoed a bill that would have increased unemployment insurance payments by many contractors. In effect, the bill would have pro-rated contributions according to per capita unemployment. It would have raised the contributions of contractors and other seasonal employers from the present 2.7% of gross payroll to as high as 3.5%.

In vetoing the bill, Governor Harriman said, with regard to the construction industry, ". . . this bill would put an added burden on and further increase the cost of housing and other buildings. It would also put the established contractor in a less favorable position than the . . . contractor from outside the state who bids on work to be done in our communities."

The bill was offered in response to the governor's request for amendment of the existing law. Under present law a subsidiary tax of 0.3% will be levied against all employers in the state to bring the level of the general account to the required 1½% of gross state payroll.

The legislative sponsors of the new bill and the Associated Industries of New York State, who promoted it, feel that all business should not absorb the responsibility of those having higher percentages of unemployed workers. They contend that employers whose former workers have received more in benefits than the company has paid in taxes to the fund should "pay their

own way" and "not be carried along by steadier firms."

Both the Building Industry Employers of New York State and the Building Trades Employers Association of New York City opposed the legislation. They felt that constructors should not be penalized for factors beyond their control that cause unemployment.

The bill contained other features generally considered desirable and these included a boost in unemployment benefits from $36 to $45 a week. A companion bill containing benefit and procedural changes in the workers' compensation law also was vetoed. Gov. Harriman announced he would call the legislature into special session June 10 to consider social insurance legislation "not encumbered with unsound and unfair provisions."

Feeling that the unemployment insurance system should not unduly penalize the small or seasonal employer, Governor Harriman stated that if the bill were pushed to its logical conclusion, ". . . every employer in the state would have to carry the entire financial burden of the unemployment of his workers," thus defeating the general theory of social insurance.

The Kohler Boycott

Homebuilders receive a warning from labor

Homebuilders in Nashville may find their home sales slowed down if they install plumbing products manufactured by the strike-bound Kohler Co. in Kohler, Wis.

In a form letter sent to all Nashville builders, the Nashville Industrial Union Council has issued this warning: "We will do everything in our power to try to persuade as many people as we can not to buy a house in which you have installed Kohler products. There can be no neutrality in this national foray. You are either with Kohler or with the people of the land. If you go with Kohler and his un-American feudalistic philosophy, you buy his products, but if you are with the people of the nation you buy any other brand."

Kohler has been picketed by the United Auto Workers for the last three years because of what the UAW describes as the "company's refusal to bargain in good faith." The strike, which has assumed national significance, already has cost the UAW over $10 million in strike benefits, plus another $2 million in the promotion of a nation-wide primary boycott of Kohler products (ENR,Aug.23,1956 p.115).

The Nashville letter, signed by Robert Haynes, chairman of the council's Kohler boycott committee, asks the home builders not to construe the letter as a request "to use or not to use any particular brand of plumbing fixtures in the new homes you intend to build." It adds: "We firmly believe it is your American privilege to use any brand you wish, but, at the same time, it is also our privilege to refuse to buy a home in which you have installed Kohler products."

A committee of three clergymen has attempted unsuccessfully to mediate the strike and last month the company again rejected a settlement offer proposed by UAW.

Work Injuries Mount

Number increases but injury rate drops as industry seeks curbs

A significant proportion of the nation's work injuries continue to occur in the construction industry, according to the U. S. Labor Department's preliminary estimates for 1956. During the year, 11.6% of all disabling injuries occurred in contract construction.

Figures compiled by the Bureau of Labor Statistics, however, indicate a net decrease in the industry's injury rate. Although injuries increased in number, they did not keep pace with the increase in employment.

The number of disabling injuries to employees in all industries last year is estimated by the bureau at 1.6 million. Of these, 180,000 were in contract construction—an increase of 5,000 over 1955. Out of these 2,600 resulted in death and 6,800 in permanent impairments.

To what extent is the industry facing up to the problem? There is some indication that an effort is being made to translate safety concern into action through safety clauses in collective bargaining agreements. A survey conducted by New York's Department of Labor, for example, showed that a majority of the state's labor contracts contain some form of safety provision.

The survey was conducted by the department's Division of Research and Statistics, and included multi-employer agreements covering 250 or more workers and single-employer contracts covering 400 or more employees.

Out of 91 such construction agreements in use last year, 55, or 60%, contained one or more safety clauses. Types of clauses and frequency of use are listed below:

Employer to provide protective clothing at no cost to employee	24
Pledge by management to comply with safety laws or regulations	23
Employer to install or furnish safety devices	12
Employees may refuse to work on unusually hazardous jobs	10
Management or union-management pledge to maintain safe working conditions	8
Safety rules to be observed by workers	8
Job steward to make report on all accidents to employer and union	6
Workers or union to report all unsafe working conditions to employer	1
Formation of a labor-management safety committee	2

Specific safety standards were found in some of the industry's union contracts. Several bricklayer and painter agreements, for example, specifically covered scaffolding requirements, and painters placed limitations on the use of benzol, wood alcohol and sprayers.

Escalator Clauses

Wider use is linked to long-term contract term

The trend toward labor contracts with terms of more than one year has generated a new interest in escalator clauses for automatic wage adjustments to compensate for cost-of-living increases, the AFL-CIO reports. At the same time, the federation notes, the traditional opposition of some unions to escalator clauses "has softened".

But according to present indications, escalator clauses still hold little favor with the building trades. Although more than half their 1956 contracts were for terms of two years or more, the pattern, except in a few isolated cases, was one of deferred wage increases of specified amounts without regard to changes in living costs. Current settlements are shaping up the same way. Traditional objection to escalation has been its tendency to restrict wage-increase thinking to terms of cost-of-living changes, thus reducing the success of union efforts to improve standards of living.

(Continued on page 148)

Nevertheless, says AFL-CIO in the February issue of its "Collective Bargaining Report", some 3.5 million workers now have escalator protection.

Factors cited as largely responsible for the wider acceptance of such clauses are management acceptance of the principle that wage increases should provide improving standards of living as well as compensation for price rises; acceptable limitations on wage decreases wrought by the use of escalators; and the necessity of escalator clauses in long-term agreements to protect wages against the damaging effects of rapid price rises.

Yardstick generally used is the Consumer Price Index of the U. S. Labor Department. Most escalator clauses call for quarterly adjustments. Resulting increases are usually treated as "wages" in calculating various types of fringe benefit payments.

Right-to-Work Ordinance Adopted at County Level

Tehama County in Northern California last month became the first county in the state to pass a right-to-work ordinance.

The measure, banning union membership as a condition of employment, was approved by the Board of Governors on a three to two vote.

The new law will go into effect within 30 days unless blocked by court action.

A similar ordinance adopted last year by the city of Palm Springs, Calif., has been held invalid by a local court on the grounds that the federal law gives the right-to-work option to state governments and not to their political subdivisions.

Jurisdictional Dispute Halts Work on Bridge

A new interstate bridge across the Columbia River between Portland, Ore., and Vancouver, Wash., became the victim last month of a jurisdictional dispute between pile drivers and iron workers.

In what the union's business agent termed an unauthorized strike, the pile drivers left their jobs because iron workers employed by Judson-Pacific-Murphy Corp., steel erection subcontractor, were driving temporary piling for falsework for use in steel erection.

All but steel work on the project came to a halt as some 50 laborers, crane operators, concrete finishers, electricians, mechanics and truck drivers employed by Guy F. Atkinson Co., prime contractor, honored the picket line.

The ninth day of the strike still found no effective action by the National Joint Board for the Settlement of Jurisdictional Disputes, to which the matter had been referred. Other crafts were then reported ready to return to work but by that time the absence of pile drivers had stymied all operations.

Advice to Employers

NLRB's Leedom urges a change in labor attitude

Boyd Leedom, Chairman of the National Labor Relations Board, has offered the suggestion that a change of attitude on the part of employers would make the Taft-Hartley Act easier for everyone to live with and at the same time perhaps avert unnecessary governmental regulations in the field of collective bargaining.

In an address before the National Labor Relations Conference recently held in Washington, D. C., by the Chamber of Commerce of the United States, Mr. Leedom said that businessmen could help the NLRB do a better job "by giving at least as much attention to the spiritual concept of the labor-management law as they do to the letter of the law." Such an approach, he observed, would tend to draw labor and management together instead of widening "the chasm of dissension" that now exists.

Employers often fail to take the "long view," or to invoke the Golden Rule, or to recognize the human factors involved in their handling of labor problems, Mr. Leedom noted, just as they "traditionally resist government regulation of business" but become the "most vociferous in advocating more regulation of unions." Some of the manifestations of this failure, he observed, are the perversion of legal rules to gain the advantage of delay, the concocting of defenses on negative aspects of board rulings, and indulgence in the "nonsense" of "trying to identify board members individually or collectively as pro-employer or pro-labor."

Mr. Leedom's constructive suggestions were numerous. He urged employers to reconcile themselves to "the proposition that the very nature of collective bargaining involves the participation of employee representatives in the formulation of policies or decisions affecting their welfare," to protect rather than misuse the right to freedom of speech, to deal with labor "frankly and fairly," and to adjust their differences "to as great an extent as possible" without seeking the aid of the NLRB.

Advising employers to learn "to work effectively" with labor rather than to turn to the government for protection of "management prerogatives," Mr. Leedom offered this warning: "Perhaps it is inevitable that the government will perform an increasingly important role as industrial society becomes more complicated. I merely want to remind you that every time you claim 'foul' on the other side and ask the government to intervene on your behalf—either by filing charges under existing law or by seeking adidtional legislation—you bring Washington to your bargaining table."

Electrical Workers Union Cracks Down on Negro Ban

The International Brotherhood of Electrical Workers has ordered IBEW Local 38 in Cleveland to drop its ban against Negroes before July 1.

The action was announced by IBEW President Gordon Freeman and Secretary Joseph Keenan, following a conference with AFL-CIO President George Meany and labor leaders and city officials from Cleveland. It represents an effort to make union locals toe the line on the federation's policy of non-discrimination.

If the local union continues to refuse membership to Negroes, the parent union is committed to taking "appropriate action" under international union law. And this includes the power to suspend.

The IBEW action stemmed from a Cleveland Negro's inability to work on a city job because he was not a member of the union. After an investigation, the city's Community Relations Board reported that Local 38 engaged in racial discrimination in violation of the city ordinances.

Pump-Tending Dispute Gets Airing in Court

Out of a work stoppage stemming from an operating engineers' demand that extra men be hired to tend dewatering pumps has come a $40,000 damage suit filed in federal district court in California by Theo G. Meyer & Sons of San Francisco.

The work stoppage occurred in March on the excavation work for the San Francisco underground civic auditorium. Local 3 of the International Union of Operating Engineers pulled its men off the job when Meyer refused to hire three extra men to tend the pumps around the clock. According to the construction firm, the pump-tending had been done by a shovel operator who was paid for the extra work. The company contended the

work was not a full-time job because the pumps were automatic and required only 15 minutes of attention for lubrication.

In the suit, Meyer is seeking compensatory damages only. The company reports that the $40,000, for which it asks, represents its expenses during the tie-up—rental of earthmoving equipment and overhead costs—plus a $250-a-day penalty exacted by the city when a job runs overtime. Work on the project was set back 27 days.

Earlier, Meyer had obtained an injunction against the strike, and the dispute was submitted under court order to arbitration. An arbitrator has been appointed to determine the merits of the union's claim that it had a right to attempt to force Meyer to hire pump operators 24 hours a day.

Labor Briefs . . .

• **Stabilization**—Members of the New Jersey State Building and Construction Trades Council were asked last month to help "stabilize our economy" by adopting a "policy of moderation" that would hold "wages and benefits at their present levels." Request came from Samuel Waldron, President of the Building Contractors Association of New Jersey.

• **No tax deduction**—Union painters cannot deduct for federal income tax purposes the cost and maintenance of special clothing, such as white cap and white bib overalls, required by the union to be worn on the job. Says the Internal Revenue Service: Such clothing "is not distinctive in character or in the nature of a uniform."

• **Fewer strikes**—Time lost by work stoppages in New York was 20% less for the first quarter of 1957 than it was during the corresponding period last year, according to State Industrial Commissioner Isador Lubin. Last year, there were 789,000 idle man-days during the first quarter—this year the figure fell to 606,000.

• **Welfare funds**—Bills providing for state examination and supervision of employee welfare funds have been introduced in the legislatures of Wisconsin, Pennsylvania and Nevada. Pennsylvania proposal is part of a "bill of rights" aimed at the protection of union members.

• **Jurisdiction**—A jurisdictional dispute between Washington, D. C., laborers and Local 5 of the plumbers union over installation of 18 in. concrete storm drainage pipes has been taken to federal court by the National Labor Relations Board, which seeks an injunction. Disputed work has been suspended temporarily.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: May 16, 1957

Mackinac Bridge Authority

Advertisement for Proposals
for the
Lighting and Electrical Work
of the
Mackinac Bridge

The Mackinac Bridge Authority will receive sealed proposals for the construction of Contract No. 10, Lighting and Electrical Work, for the Mackinac Bridge until 2:00 P.M., Eastern Standard Time on the 16th day of May, 1957, at the office of the Authority, Mackinac Bridge, St. Ignace, Michigan, at which time and place proposals will be publicly opened and read aloud.

The work includes the construction of the following:

1. Construction of two (2) transformer houses complete with equipment, and equipment for four (4) substations on bridge structure to be placed on platforms provided by others.

2. A three-phase, 4-wire, 2400/4160-volt, 60 cycles multiple electrical distribution system for the high voltage series mercury vapor bridge lighting system. Total length of bridge, causeway and toll plaza is approximately 23,000 linear feet.

3. A low voltage, three-phase, 4-wire, 120/208-volt distribution system for the supply of current for light and power to the following:

(a) Administration Building
(b) Toll Booth System in the Toll Plaza
(c) Beacon Lights
(d) Navigation lights on 32 bridge piers and on the Suspended Spans
(e) Lighting for bridge cables. Total length of cables is approximately 15,200 linear feet.
(f) Floodlights for bridge towers.
(g) Fog Bell Controls
(h) Receptacles and lights and switches in the interiors of the towers, cable anchorages, cable bents and to Control room in towers for power supply to elevators that will be installed by others.

The principal items of work include:

Complete Bridge Lighting including conduit, cable, Light Standards, luminaires, lamp ballasts, foundations, Beacon lights and Flashers and Service Boxes	23,000 L. F.
Navigation Lights	70 Ea.
Transformer Houses and Equipment	2
Equipment for Substations on Structure	4
Cable Lighting including lamps, cable, boxes, and floodlights	15,200 L. F.

Plans, Specifications, Proposal Form and Contract Documents for the work are on file in the office of the Mackinac Bridge Authority and in the office of D. B. Steinman, Consulting Engineer, 117 Liberty Street, New York 6, New York, and may be inspected by prospective bidders during office hours.

Plans, Specifications, Proposal Form and Contract Documents may be obtained from D. B. Steinman, Consulting Engineer, 117 Liberty Street, New York 6, New York upon application and payment of a fee of thirty-five ($35.00) dollars, fifteen ($15.00) dollars of which will be refunded upon return of the Plans to non-bidders, and all of which will be returned to bidders.

Bids must be made upon the proposal form included in the Contract Documents. Each proposal must be accompanied by draft or certified check payable to the order of the Mackinac Bridge Authority for the sum of fifty thousand ($50,000.00) dollars.

The right is reserved to reject any or all bids.

MACKINAC BRIDGE AUTHORITY
Prentiss M. Brown, Chairman

April 25, 1957

Bids: May 21, 1957

City of Richmond, Virginia

NOTICE TO BIDDERS

Sealed Proposals will be received at the office of the Director, Purchases and General Services, 4th floor, Mosque Building, Laurel and Main Streets, Richmond, Virginia, until but not later than 11 o'clock A. M. E.S.T., May 21, 1957, at which time they will be publicly opened and read aloud, for the following work which may be awarded in whole or in part.

Type of Work. The work to be done is part of the Sewage Disposal Project, is entitled "Division V—Outside Piping and Miscellaneous Structures", and comprises the furnishing of all labor, materials, equipment and work incidental thereto for the construction of the sludge beds, sludge lagoons, outside piping, railroad siding and miscellaneous structures, as shown, specified and directed.

Location. The Outside Piping and Miscellaneous structures will be located at the site of the Sewage Treatment Plant, adjacent to the southwest bank of the James River at Rockett's Wharf, northeast of the United States Naval Diesel School, in the City of Richmond, Virginia.

The proposal and other contract documents may be examined at the office of the Director of Public Works, 217 Governor Street, Richmond, Virginia, and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of the contract documents may be obtained from the office of the Director of Public Works upon the deposit of Twenty-Five Dollars for each set. Any general contractor who submits a bona fide bid on the project will be refunded his payment in full for not more than three sets, and will be refunded fifteen dollars per set for each additional set. All others will be refunded fifteen dollars per set upon the return of the documents in good condition within ten days after the opening of the bids.

J. W. Huffman
Director of Purchases and
General Services

Bids: June 4, 1957

Contract PN-420.004

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
STRUCTURAL STEEL
BUILDINGS NOS. 191, 192, 193 and 194

Sealed proposals for furnishing and erecting structural steel for Buildings Nos. 191, 192, 193 and 194 at Port Newark, New Jersey, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 4, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $20.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $20.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 9, 1957

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, N. Y.

Bids: May 16, 1957.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 16th day of May 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.						
Albany (Rte. 85A)	R.C. 57-50	North, S.H. 124	0.31	Asp. Conc., Opt. = 0.28 Mi. Misc. Work = 0.03 Mi.	$2,000 Plans $10	$38,000
Essex (Rte. 9)	FARC 57-51	Schroon Lake–North Hudson, Pt. 2 S.H. 5180 Project F-383(11)	0.74	9" Cem. Conc. Pavt. 24' Wide = 0.69 Mi. Misc. Work=0.05 Mi. Reinf. Conc. Closed Boxed Br. 30'	$21,000 Plans $10	383,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Oneida (Rte. 49 & 12C)	FARC 57-48	Mohawk River Road–Marcy, S.H. 296 Whitesboro–Carey Corners, S.H. 5547–5547C.A. Whitesboro–Trenton, S.H. 5325 Proj. U-518(4)	1.33 0.97) (Acc.)	9" Cem. Conc. Pavt. 26–24' Var. Wide=1.70 Mi. Asph. Conc., Opt.=0.48 Mi. Misc. Work=0.12 Mi. 1 Hy.Sep.Comp.I-Beam 189.2' 1 Br. Cantilever Truss 316'	$79,000 Plans $25	1,431,000
Madison & Oneida	C.R. 57-1	City of Oneida North-South Arterial Connection, FASH 56-2, Oneida–Southbay, Pt. 1, S.H. 1110	....	Removal & Reinterment of Human Remains	$125 Plans $10	2,200
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Livingston (Rte. 15)	FARC 57-52	Conesus–Wayland, S.H. 1321 Proj. F 509(4)	4.21	Asph. Conc.=4.09 Mi. Misc. Work=0.12 Mi.	$30,000 Plans $25	545,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
Erie (Rte. 20A)	FARC 57-54	Orchard Park–East Aurora, S.H. 1066 Proj. F-1054(3)	1.09	Asph. Conc., Opt.=1.07 Mi. Misc. Work=0.02 Mi.	$12,000 Plans $10	224,000
Erie (Rte. 5)	FARC 57-55	Evans Center–Farnham, S.H. 5634 Farnham–Irving, S.H. 5600 Proj. F-736(6)	6.61	Asph. Concrete	$45,000 Plans $10	795,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 W. Main St., Hornell, N. Y.						
Schuyler (Rte. 224 & 13)	FARC 57-58	Montour Falls–Alpine, Pt. 2, S.H. 999 Alpine–Cayuta, Pt. 1, S.H. 1233 P.S.C. 5349 & Cayuta–Newfield, S.H. 5474A-P.S.C. 5350 Proj. F-400(5), F-560(5)	4.67	Asph. Conc., Opt.	$20,000 Plans $10	381,000
Schuyler (Rte. 14)	FARC 57-59	Watkins Village Franklin St., S.H. 5335, Watkins–Yates County Line, S.H. 5334, Gabriels Corners–Starkey, Pt. 1, S.H. 1918 & Gabriels Corners–Starkey, Pts. 1&2, Starkey–Dresden, Pt. 1, S.H. 8399 Project F-505(6)	3.56	Asph. Conc., Opt.	$110,000 Plans $25	1,987,000
Steuben (Rte. 36)	FARC 57-60	Arkport–Dansville, S.H. 5352–5352A Project F-579(5)	5.11	Asph. Conc. Opt.=5.05 Mi. Misc. Work=0.06 Mi.	$52,000 Plans $15	955,000
Steuben (Rte. 36)	FARC 57-61	Hornell–Arkport, S.H. 5254 Project F-619(4)	2.71	Asph. Conc.	$11,000 Plans $10	196,000
Steuben (Rte. 15)	FARC 57-63	Erwin–Lawrenceville, Pt. 1, S.H. 1593 Project F-593(9)	3.81	Asph. Conc.	$18,000 Plans $10	319,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
St. Lawrence (Rte. 37)	FARC 57-47	Morristown–Hammond Pt. 2 S.H. 970–970A Project F-650(5)	4.55	Asph. Conc. Opt.	$32,000 Plans $25	577,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Columbia	TSP 57-1P	Taconic State Parkway, Sect. 9B, Part 2 (West Taghkanic–Martindale)	8.02	Asph. Conc. Opt.=7.93 Mi. 8" Unreinf. Cem. Conc. Var. Wide=0.09 Mi.	$130,000 Plans $50	2,482,000
Columbia	FASH 57-10 FARC 57-49	Rhinebeck–Hudson, Pt. 5, SH 8341 Livingston–Hudson, Pt. 2, S.H. 5073 Rit Van Winkle Bridge–Buckley Corners–Claverack, Pt. 1 and East Approach Rip Van Winkle Bridge Intersect. Project F-492(6); F-863(1)	3.31 (1.35) (Acc.)	9" Cem. Conc. Pavt. 2 at 24' Var. Wide=4.11 Mi. Asph. Conc.=0.47 Mi. Misc. Work=0.08 Mi.	$95,000 Plans $25	1,726,000
Ulster (Rte. 213)	FARC 57-64	Kingston–High Falls, S.H. 229 High Falls–Stone Ridge, S.H. 1464 Project S-461(1)	1.96	Asph. Conc. Opt.	$25,000 Plans $10	440,000
Ulster (Rte. 32)	FARC 57-72 FA 57-1	West Approach to Kingston–Rhinecliff Bridge (Rte. 9W to Rte. 32); Kingston–Ulster Landing, S. H. 306 Project S-479(1)	4.99 (0.76) (Acc.)	9" Cem. Conc. Pavt. 48' Var. Wide=1.72 Mi. Asph. Conc., Opt.=0.94 Mi. Hy. Sep. Prestress, Conc. Beam 155.9'	$72,000 Plans $15	1,316,000
Westchester	FINETC 57-3	New York State Thruway–New England Section–Sub. NE-5 (Rye Interchange Area, East of Boston Post Road) Project I-IN-1068(13)	0.46	Modification to Railroad Facilities and Re-Routing of Communication Lines	$18,000 Plans $25	336,000
DISTRICT No. 9, J. C. Fredrick, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Chenango (Rte. 41)	FARC 57-27	Afton–Coventry, S.H. 5698 Project S-668(3)	3.55	Asph. Conc., Opt. Widening Two Exist. Bridges	$20,000 Plans $10	364,000
Sullivan	FESS 57-6	Barryville–Yelan, C.R.21 Project ER-26(2)	1.86	Asph. Conc., Opt.	$13,000 Plans $15	238,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws; as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: June 4, 1957

Ocean City-Longport Bridge Deck Reconstruction of South Approach Beam Spans

CAPE MAY COUNTY BRIDGE COMMISSION
CAPE MAY COURT HOUSE, NEW JERSEY

Dated: May 7, 1957

Sealed bids for the deck reconstruction of the south approach beam spans of the Ocean City-Longport Bridge will be received by the Cape May County Bridge Commission in its offices at Cape May Court House, New Jersey, until 2 P.M. Eastern Daylight Saving Time, June 4, 1957 and then at said place, publicly opened and read aloud.

The work consists generally of replacing the existing concrete deck on the thirteen 35-foot rolled beam simple spans which form part of the south approach of the Ocean City-Longport Bridge as shown on the Plans.

The Information for Bidders, Proposal, Contract, Contract Bond, Plan and Specifications may be examined at the office of the Commission, First National Bank Building, Cape May Court House, New Jersey, and at the office of Howard, Needles, Tammen & Bergendoff, Consulting Engineers, 99 Church Street, New York 7, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Commission or to the Consulting Engineers. The payment will not be refunded and contract documents are not required to be returned.

The Contract will be awarded or the proposals rejected within thirty (30) days from the date of opening proposals. The Commission reserves the right to waive any informalities in and to reject any or all bids.

Cape May County Bridge Commission
Charles B. Middleton, Chairman

Bids: May 28, 1957

Alabama State Docks Department

Sealed proposals will be received by the State of Alabama State Docks Department at the Office of the Director at the Alabama State Docks Office Building, Mobile, Alabama, until 10:00 A. M. Central Standard Time, May 28, 1957, and then publicly opened for furnishing necessary materials, labor equipment, supplies, supervision, etc., and constructing the following described work:

Construction of Transit Shed, Concrete Platform and Electrical System at Berths 3, 4 and 5 of Marginal Wharf for the Department of State Docks & Terminals, Mobile, Alabama.

A certified check or a Bidder's Bond payable to the State Docks Department, for an amount not less than five (5) per cent of the amount bid, but in no event more than Ten Thousand ($10,000.00) dollars shall be filed with the proposal, the Bidder's Bond being prepared upon the form specified and signed by a Bonding Company authorized to do business in the State of Alabama.

Specifications, proposal forms, bid and performance bond forms, contract forms and plans will be on file in the office of Trotter-Ernest Engineering Co., 1814 Old Shell Road, Mobile, Alabama, the Birmingham Building Exchange, Birmingham, Alabama, the Dodge Plan Room, Birmingham, Ala., and in the office of the State Docks Director, on and after May 1, 1957. Complete sets will be furnished to qualified prospective bidders on payment to Trotter-Ernest Engineering Co. of Fifty ($50.00) Dollars. Refund of Twenty-Five ($25.00) Dollars will be made to bona fide bidders who have bid on the work and who return sets in good condition within ten (10) days after opening bids. Extra sets will be furnished to bidders and to other interested parties upon payment of Twenty-Five ($25.00) Dollars, none of which will be refunded.

A performance bond in an amount not less than the sum bid will be required at the signing of the contract and, in addition, a bond in an amount not less than fifty (50%) percent of the contract price, insuring payment for all labor and materials.

No bid will be considered unless the bidder, whether resident or non-resident of Alabama, is properly qualified to submit a proposal for this construction in accordance with all applicable laws of the State of Alabama. This shall include evidence of holding a current license from the State Licensing Board for General Contractors, Montgomery, Alabama, and pre-qualification by the State Building Commission, Montgomery, Alabama. In addition, non-residents of the State will show evidence of having qualified with the Secretary of State to do business in Alabama.

The right is reserved to reject any and all bids and to waive informalities.

STATE OF ALABAMA
State Docks Department
Ward McFarland, Director

Bids: June 6, 1957.

Intercepting Sewers, Pumping Stations and Sewage Treatment Plant for the City of Norwich, Connecticut

ADVERTISEMENT
NOTICE TO CONTRACTORS

Sealed bids for the construction of intercepting sewers, pumping stations, force mains, sewage treatment plant, outfall sewer and appurtenances for the City of Norwich, Connecticut will be received at the office of the City Purchasing Agent, City Hall Building, Norwich, Connecticut, until 2:30 P.M. Eastern Daylight Saving Time on June 6, 1957, and then taken to the Council Room and publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Form of Performance Bond, may be examined at the office of the City Purchasing Agent, Norwich, Connecticut and at the offices of Keis & Hotroyd, Consulting Engineers, 257 Broadway, Troy, New York and at the offices of Chandler & Palmer, Engineers, Thayer Building, Norwich, Connecticut and copies thereof may be obtained at the offices of Keis & Hotroyd or Chandler & Palmer upon payment of $50.00 for each set. Any bidder returning such set promptly and in good condition will be refunded his payment and any non-bidder upon so returning such set within 10 days after bidding date will be refunded $10.00.

The City of Norwich, Connecticut reserves the right to waive any informalities in, or to reject any or all bids.

A certified check or bid bond made payable to the order of the City of Norwich, Connecticut, in the amount of 5% of the bid must be deposited by each bidder with his bid as a guarantee that in case the contract is awarded to him, that he will, within 5 days thereafter, execute such contract and furnish a satisfactory bond. On failure to do so he shall forfeit the deposit as liquidated damages and acceptance of the bid will be contingent upon the fulfillment of this requirement by the Bidder.

The successful bidder will be required to furnish a performance bond satisfactory to the Corporation Counsel, City of Norwich, Connecticut, in the amount of the contract, and having as surety thereon such surety company or companies as are acceptable to the Corporation Counsel of the City of Norwich, Connecticut and having an office within the limits of the Town of Norwich, Connecticut.

The work will be divided into sections and subdivisions as follows:

Section I—Intercepting Sewers, Pumping Stations, Force Mains.

Section II—Sewage Treatment Plant and Outfall Sewer.

Subdivision I—General Construction
Subdivision II—Sludge Filters and Equipment
Subdivision III—Plumbing
Subdivision IV—Heating and Ventilating
Subdivision V—Electrical Work

The work may be let as one contract or separate contracts may be let for each of the sections or each of the subdivisions under any section, except that manufacturers of cast iron pipe and specials may bid directly to the City for furnishing some of these materials for each section.

No bidder may withdraw his bid within 30 days after the date set for the opening thereof. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof.

THE CITY OF NORWICH, CONNECTICUT
By: Edward Frechette
Purchasing Agent

Dated: April 29, 1957
Keis & Hotroyd, Consulting Engrs., Troy, New York.
Chandler & Palmer, Engrs., Norwich Connecticut.

Bids: June 17, 1957.

Government of Iraq Electrification of Northern and Central Iraq Contract No. 15 Piping, Pumps and Tanks

The Development Board and Ministry of Development of the Government of Iraq invite tenders from qualified firms for the supply and delivery of the Piping, Pumps and Tanks for the Dibis and Baghdad Power Stations.

Full information regarding this tender can be obtained on and after April 15, 1957 from Iraqi Embassy, Washington, or Electrobel Traction et Electrielte, 1 place due Trone, Brussels, Belgium.

All Tender Documents are to be submitted in English to the Ministry of Development, on or before 12, noon, local time on June 17, 1957.

Minister of Development

U. S. Government

DEPARTMENT OF HIGHWAYS MONTPELIER, VERMONT. NOTICE TO CONTRACTORS. Sealed proposals will be received by the department at the State Office Building until 11:00 o'clock A.M. Eastern Daylight Saving Time (10:00 o'clock A.M. Eastern Standard Time) on Friday, May 17, 1957, for the construction of the following project: VERNON-GUILFORD IN-I-001-1 (5) — In the Towns of Vernon-Guilford; the Bernardston, Massachusetts-Brattleboro, Vermont road; beginning approximately 2.389 miles northerly of the Massachusetts-Vermont State Line and extending northerly 1.890 miles. Construction being grading, drainage, sub-base with a bituminous concrete surface course including a 1-span, 29', Composite WF-Beam bridge for each lane and a 4-span 238', composite WF-Beam bridge over the Interstate. Complete information at said office; plans on display at the office of R. O. Munn, District Highway Engineer; Brattleboro, Vermont. Minimum wage rates predetermined by the Secretary of Labor for the project are set out in the advertised specifications and bid proposal, and such rates are a part of the contract covering the project. Minimum truck rates have been predetermined by the State Highway Board and are set out in the bid proposal. Contractors bidding on construction involving over $25,000.00 must be prequalified in accordance with Department Regulations. Right is reserved to reject any or all bids and waive any technicalities. Contractors may submit a bid on the Guilford-Vernon IN-001-1 (4) and Vernon-Guilford IN-I-001-1 (5) projects separately and/or as a combined project.

William Foster
Commissioner of Highways

Montpelier, Vermont
April 25, 1957

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4900) will be received at Vernal, Utah, until May 23, 1957, for furnishing labor and materials for earthwork, structures, and surfacing for access road to Flaming Gorge, Station 402 to 518+40, Colorado River Storage Project, Utah-Wyoming. Location near Linwood, Utah. Principal items are: 356,000 cu. yds. excavation; 3,730 lin. ft. corrugated metal pipe; 10,175 lin. ft. guardrail; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, Vernal, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

CONTRACTORS
WATCH
THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

U. S. Government

Bids: May 30, 1957

Government of Iraq
The Grain Board
Ministry of Economics
Subsurface Exploration and Laboratory Testing for the Grain Silo and Appurtenant Structures at Basrah, Iraq

1. The Iraqi Grain Board invites tenders for the subsurface exploration and laboratory testing for a grain silo and appurtenant structures at Basrah Iraq, all in accordance with schedules, drawings, and addenda covering the work. A unit price type of contract covering all the required work will be awarded to the successful tenderer.

2. The work to be performed includes but is not limited to the following:
   a. Subsurface drilling on land from ground surface to 150 feet below ground surface.
   b. Subsurface drilling on water (Shatt-al-Arab) from Mean Low Water Surface to 150 feet below Mean Low Water Surface.
   c. Taking two-inch splitspoon drive samples, from the drill holes as required by the Engineer, including packaging, shipping, testing and preparation of report of tests.
   d. Taking three-inch thin wall tube samples from the drill holes as required by the Engineer, including packaging, shipping, testing and preparation of report of tests.
   e. Taking Denison Type Double Tube Core Barrel 2¾-inch Diameter Core from the drill holes as required by the Engineer, including packaging, shipping, testing and preparation of report of tests.

3. Copies of the documents for tender may be inspected at the following addresses on or after the 25th April, 1957.
   a. Office of the President of the Grain Board, Ministry of Economics, Mirjan Building, South Gate, Baghdad, Iraq.
   b. Iraqui Embassies in Washington, London, Bonn, Brussels and Rome.

4. Copies of documents for tender may be obtained on or after the 25th April, 1957, upon payment of ID.5.000 (Five Iraqi Dinars) Frm:
   a. Office of the President of the Grain Board, Ministry of Economics, Mirjan Building, South Gate, Baghdad, Iraq.
   b. Office of the Consulting Engineers, Tippetts-Abbett-McCarthy Stratton, Engineers, at 5 Merlin Street, P.O. Box 42, Athens, Greece and 62 West 47th Street, New York 36, N. Y., U. S. A.

5. Tenders must be written in English, enclosed in a sealed package and endorsed clearly on the outside thereof with the Words "Tender for Subsurface Exploration for the Grain Silo and Apurtenant Structures at Basrah, Iraq". They shall be addressed to the President of the Grain Board, Ministry of Economics, Mirjan Building, South Gate, Baghdad, and shall be delivered to the offices of the President of the Grain Board in Baghdad on or before 12:00 o'clock noon local time on 30th May, 1957. If sent by post, the tenders shall be registered, but the tenderers must assure themselves of delivery to the President of the Grain Board in due time.

6. The tender must be accompanied by a Deposit of guarantee of ID.2000.000 (Two Thousand Iraqi Dinars) or the equivalent. Such deposit, if paid in cash, shall be paid to the Grain Board, in Baghdad, or to their order by check drawn on an approved bank in Baghdad, or if made by letter of guarantee such guarantee must be paid from or confirmed by an approved bank in Iraq.

7. Tenders not submitted in the time specified or not accompanied by the required deposit, will not be considered.

8. During the time allowed for tender, the Grain Board reserves the right to amend the documents for the purpose of clarification or to reflect modifications in the work required in the performance of the contract or in the contract conditions. Any such amendments will be in the form or formal adenda distributed to the prospective tenderers.

9. The Grain Board does not bind itself to accept the lowest of any tender received.

10. The Grain Silo site is located on the right bank of the Shattal-Arab immediately downstream from Jubiala Creek between the cities of Margil and Ashar, Iraq. The site boundaries have been marked and may be viewed by tenderers. The site is accessible by road.

Dated——1957
Baghdad—Iraq.

Nathir Umari
President of the Grain Board

U. S. Government

DEPARTMENT OF HIGHWAYS, MONTPELIER, VERMONT. NOTICE TO CONTRACTORS. Sealed proposals will be received by the department at the State Office Building until 11:00 o'clock A.M. Eastern Daylight Saving Time (10:00 o'clock A.M. Eastern Standard Time) on Friday, May 17, 1957, for the construction of the following project: GUILFORD-VERNON IN-001-1 (4): In the Towns of Guilford-Vernon; the Bernardston, Massachusetts-Brattleboro, Vermont road; beginning at the Massachusetts-Vermont State Line and extending northerly 3.989 miles. Construction being grading, drainage, sub-base and a bituminous concrete surface course. Complete information at said office; plans on display at the office of R. O. Munn, District Highway Engineer; Brattleboro, Vermont; minimum wage and truck rates have been established. Contractors bidding on construction involving over $25,000.00 must be prequalified in accordance with Department Regulations. Right is reserved to reject any or all bids and waive any technicalities. Contractors may submit a bid on the Guilford-Vernon IN-001-1 (4) and Vernon-Guilford IN-I-001-1 (5) projects separately and/or as a combined project.

William Poeter
Commissioner of Highways

Montpelier, Vermont
April 25, 1957

DEPARTMENT OF HIGHWAYS, MONTPELIER, VERMONT. NOTICE TO CONTRACTORS. Sealed proposals will be received by the department at the State Office Building until 11:00 o'clock A.M. Eastern Daylight Saving Time (10:00 o'clock A.M. Eastern Standard Time) on Friday, May 17, 1957, for the construction of the following project: GUILFORD-VERNON IN-001-1 (4) & VERNON-GUILFORD IN-I-001-1 (5): In the Towns of Guilford-Vernon; the Bernardston, Massachusetts-Brattleboro, Vermont road; beginning at the Massachusetts-Vermont State line and extending northerly 5,879 miles. Construction being grading, drainage, sub-base with a bituminous concrete surface course including a 1-span, 99', composite WF-Beam bridge for each lane and a 4-span, 238', composite WF-Beam bridge over the Interstate. Complete information at said office; plans on display at the office of R. O. Munn, District Highway Engineer; Brattleboro, Vermont. Minimum wage rates predetermined by the Secretary of Labor for the project are set out in the advertised specifications and bid proposal, and such rates are a part of the contract covering the project. Minimum truck rates have been predetermined by the State Highway Board and are set out in the bid proposal. Contractors bidding on construction involving over $25,000.00 must be prequalified in accordance with Department Regulations. Right is reserved to reject any or all bids and waive any technicalities. Contractors may submit a bid on the Guilford-Vernon IN-001-1 (4) and Vernon-Guilford IN-I-001-1 (5) projects separately and/or as a combined project.

William Poeter
Commissioner of Highways

Montpelier, Vermont
April 25, 1957

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4901) will be received at Ogden, Utah, until May 24, 1957, for furnishing labor and materials for Willard Dike, Weber Basin Project, Utah. Location near Ogden, Utah. Principal items are construction of approximately 7 miles of dike with a maximum height of 6 feet and crest width of 45 feet and construction of approximately 11 miles of open ditch drains with from 3-foot to 20-foot bottom width. Total excavation of about 826,000 cu. yds.; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: June 4, 1957

City of Millville
Proposals for Sewers and Sewage Treatment Work

Sealed bids will be received by the City of Millville, Cumberland County, New Jersey, at the Millville City Hall in the Commission Chamber, Millville, New Jersey, until 2:30 P.M., D. S. T., on TUESDAY, June 4, 1957, for the furnishing of all labor, materials and equipment for the construction of additions and improvements to the City of Millville Sewage Treatment facilities. At the above time and place bids will be publicly opened and read aloud.

The City of Millville reserves the right to reject any or all bids or to make award to such bidder, who, in the judgment of the Council of the City of Millville, makes the most advantageous proposal.

Each proposal must be accompanied by a certified check or bid bond drawn to the order of the City of Millville, in an amount of at least five percent (5%) of the bid price, with the understanding that the bid security of the successful bidder will be forefeited to the City of Millville as liquidated damages in case of failure of such bidder to enter into a contract for the execution of the work within ten (10) days after written notice so to do has been served upon him by the city of Millville.

Plans and specifications may be examined at the office of the City Engineer, Mr. Maxwell C. Barber, in Millville City Hall, during ordinary business hours or may be obtained from the Consulting Engineer, Albert C. Jones Associates, 223 High Street, Mt. Holly, New Jersey, upon deposit of the sum of Fifty Dollars ($50.00) which deposit will be refunded to bona-fide bidders upon return of these documents in good condition within ten (10) days after award of contract. Persons who take out plans and specifications and do not follow through with an official proposal will be entitled to only one-half refund when the documents are returned.

BY ORDER OF THE MAYOR AND BOARD OF COMMISSIONERS OF THE CITY OF MILLVILLE.

CONRAD A. WALTMAN
City Clerk.

April 25, 1957

Bids: May 28, 1957

Chambersburg, Pennsylvania
Notice to Bidders

Sealed proposals for the construction of improvements to the sewage treatment works together with construction of all necessary appurtenances and services will be received by the Burgess and Town Council of the Borough of Chambersburg, Chambersburg, Pennsylvania until 7:30 P. M., EDST, Tuesday, May 28, 1957 at which time the bids will be publicly opened and immediately read in a public meeting to be held in the Municipal Building, 100 South Second Street, Chambersburg, Pennsylvania.

Specifications, Proposal Forms, Construction Drawings and other contract documents may be examined at the office of Glace & Glace, Inc., Consulting Engineers, Harrisburg, Pennsylvania, and at the Municipal Building, Chambersburg, Pennsylvania. A complete set of bidding documents including plans and specifications for all contracts may be obtained from the office of Glace & Glace, Inc., 1001 North Front Street, Harrisburg, Pennsylvania, upon deposit of $50.00.

The Burgess and Town Council of the Borough of Chambersburg reserves the right to reject any or all bids, to waive any technical defects and to accept any bid or combination of bids that it may deem to be for the best interests of the Borough.

BY ORDER OF THE BURGESS AND TOWN COUNCIL OF THE BOROUGH OF CHAMBERSBURG.

George B. Jacobs
Borough Secretary

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36. May 23rd issue closes May 13th

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Designers - Electrical - Piping - Struct. Power Plants and Industrial Buildings. Marbarry Corp. 120 Greenwich St., New York City 6, N. Y. REctor 2-3749.

Gunite Superintendent—Wanted immediately. Middle Atlantic States. State age, experience, availability, salary desired. P-4640, Engineering News-Record.

Map draftsman for surveyors office located in Chicago, Ill. State qualifications in 1st reply and sample of lettering. P-4692, Engineering News-Record.

Checkers: Heavy pressure vessel shop needs experienced old timers. Top wages and overtime. Many fringe benefits. Florida type climate and country's finest hunting and fishing. Some detailers also needed. Permanent and expanding work load. Apply with full particulars and photo to Emile Lussed, Chief Engineer, Delta Tank Manufacturing Co., Baton Rouge, Louisiana.

Structural Engineer for permanent position with established consulting engineering firm in South Florida. Experience in multi-story design, reinforced concrete and structural steel desirable. Salary open. P-4958, Engineering News-Record.

Engineers—Architects—Draftsmen. Experienced in design and supervision of construction on water works, sewers and general building construction. State experience, age, salary requirements and earliest date available. P-4813, Engineering News-Record.

Estimator-Project Manager or Assistant for building construction. Well established, growing Company in Rhode Island. Three to Five years contractor experience desirable. Good opportunity for advancement. P-4970, Engineering News-Record.

Wanted—Experienced estimator for heavy and highway construction. Young man not to exceed 40 years of age. Phone AT 8-2694, Derby, Colorado or Write to Box 758, Derby, Colo.

City Engineer: Registered professional engineer desired for City of approximately 18,000. Municipal experience desired, but not mandatory. Full details of education, experience and qualifications should be furnished. Contact Mayor, Fremont, Nebraska.

Laboratory—Ass't. Manager: Man with engrg. background desired for central lab. of lge. port. cement mfgr. in Chicago. Coordinate work of physical and chemical sections. Ability to analyse data and prepare reports. Send resume of work exp., pers. data, and salary required. P-5010, Engineering News-Record.

Inspector of Construction—35—60 yrs., with strong background of experience in inspection of roads and sewers. Experience in surveying and drafting also desirable. Salary $6,000. Location—Princeton, New Jersey. P-5021, Engineering News-Record.

Structural Engineers, with a minimum of three years experience in building design investigate the opportunities in Colorado. Immediate positions are available in many consulting offices in Denver. Address your inquiry to Secretary, Consulting Engineers Association of Colorado, 723 Delaware Street, Denver 4, Colorado for a list of engineering offices interested in your talents.

(Continued on page 156)

EXECUTIVE STRUCTURAL ENGINEER

Wanted by a large, heavy industry—multi-plant midwestern company—to take top responsibility for all plant improvement, new plant construction and general engineering problems—leading to position of **VICE PRESIDENT** and **CHIEF ENGINEER.** Qualified applicant must have sufficient background in heavy construction—and structural and mechanical engineering fields with at least ten years of proven, successful responsibility in similar capacities.

Real opportunity—commensurate salary with unusually attractive retirement program. Give details and qualifications in full (confidence respected).

P-5001, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEER
PROJECT
PROCESS DESIGN

P-5006, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ESTIMATOR

Excellent opportunity with rapidly expanding contractor in midwest. Specific, responsible experience in one or more of the following will be considered valuable: bridges, grade separations, concrete & asphalt paving, city widening & resurfacing projects. Salary commensurate with experience.

P-4999, Engineering News-Record
520 N. Michigan Ave., Chicago, Ill.

CITY OF DALLAS NEEDS PLANT MAINTENANCE SUPERVISOR

Degree in electrical or mechanical engineering or equivalent. Five years responsible experience in large public or private water system. Salary range $469 to $622 per month. Apply or write to: **Civil Service Board, Room 401, Municipal Building, 2014 Main, Dallas 1, Texas.**

WANTED

FOREMAN

Charge of Asphalt Paving, Ohio Specifications. Must have experience and references.

P-5061, Engineering News-Record,
520 N. Michigan Ave., Chicago 11, Ill.

McKEE

has permanent openings for

ENGINEERS
DESIGNERS
DRAFTSMEN

in the following categories:

STRUCTURAL
CONCRETE
PIPING
MECHANICAL
ELECTRICAL

BROAD diversification of work in our three engineering divisions assures you security of employment.

TELEPHONE OR WRITE TO
VICTOR HOPKINS

Arthur G. McKee & Company
2300 Chester Ave., Cleveland 1, Ohio
PHONE TOwer 1-2300
Engineering offices in
CLEVELAND, OHIO • UNION, N.J. • TORONTO, ONT.

STRUCTURAL STEEL DETAILERS CHECKERS - SQUAD LEADERS

Experienced in Power Houses, Mill, & Tier Bldgs. Permanent positions open in our DETROIT AND MIAMI, FLA. OFFICES. Top rates and many Co. benefits.

We share moving expenses

Send resume and salary expected

WHITEHEAD & KALES CO.
58 Hallner St., Detroit 18, Mich.
or
150 S.E. 2nd St., Miami 32, Fla.

POSITIONS AVAILABLE

FOR

ENGINEERS
DESIGNERS DETAILERS

ON HIGHWAY, EXPRESSWAY AND DRAINAGE
ENGINEERING DESIGN IN OUR ST. LOUIS OFFICE

YOU WILL WORK WITH HIGHLY SKILLED
ENGINEERS IN A PLEASANT ENVIRONMENT

Overseas Openings Available For Engineers 30 to 45
With Extensive Experience in Highway Engineering

Write Fully To

SVERDRUP & PARCEL ENGINEERING CO.
1134 LOCUST ST., ST. LOUIS 1, MO.

ENGINEERS

Positions open for experienced Engineers with excellent opportunities for advancement:

CIVIL OR SANITARY ENGINEERS to design Sewage Treatment Plants and Sewage Works or to take charge of individual project.

STRUCTURAL DESIGNERS experienced in Concrete and Steel design of Sewage Treatment Plants, Water Treatment Plants, or Hydraulic Structures in connection with Dams.

SOILS ENGINEERS experienced in Slip Circle Analysis Method for design of Earth Dams or experienced in Highway Construction.

HYDRAULIC ENGINEERS experienced in design of Earth and Concrete Dams or Water Treatment Plants.

CIVIL OR SANITARY ENGINEERS as Principal Assistant in Design.

DRAFTSMEN experienced in Turnpikes, Bridges, Dams, Water Treatment and Sewage Treatment Plants.

SPECIFICATION WRITER experienced in Sewage Plant Specifications.

Ideal living conditions, vacations and sick leave, bonus, insurance and retirement benefits.

Send complete resume to —

GANNETT FLEMING CORDDRY & CARPENTER, INC.

P. O. Box 366 Harrisburg, Penna.

Highway & Bridge Engineers Designers & Draftsmen

Career opportunities for men interested in professional recognition.
Excellent working conditions and employee benefits including liberal retirement program.
Openings in Pennsylvania, Maryland, Florida, West Virginia, Mississippi and overseas.

Air Mail Resume TO R. L. SHAW, Personnel Director

MICHAEL BAKER, Jr., INC.

BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

ARCHITECTURAL ENGINEER

Architectural Engineer between ages of 25 and 35 with interest in design of industrial buildings and structures.

Excellent opportunity with consulting engineering firm in Middle West. Liberal benefit plans and good working conditions.

Send resume of education and experience with statement of salary requirements to:

P-3222, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

STRUCTURAL and MECHANICAL DESIGNERS

Having experience with heavy material handling equipment

Permanent Position For Qualified Men

HOSPITALIZATION INSURANCE VACATION

Phone or Write Chief Engineer for interview

THE WELLMAN ENGINEERING CO.

7000 CENTRAL AVE.
Cleveland 4, Ohio
Telephone EN 1-0842

GRADUATE CIVIL ENGINEER

Or equivalent experience to assist Superintendent of Public Works Poughkeepsie, New York. Salary dependent upon experience and ability. Replies treated confidentially. Give experience and full details in reply to

HAROLD R. DEAN
Acting City Manager
City Hall Poughkeepsie, New York

CIVIL ENGINEER

Young civil engineer interested in broad application of civil engineering.

Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

Send resume of education and experience with salary requirements to:

P-3223, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

BRIDGE & HIGHWAY ENGINEERS DRAFTSMEN

BROOKHART & TYO

Consulting Engineers

3501 N. Front St. Harrisburg, Pa.

PROJECT MANAGER

Required for Large Bridge Central America. Must be experienced in Cofferdams, long-span steel erection and concrete work. Engineering graduate desired. Knowledge of Spanish helpful. Send resume to

CARIBBEAN CONSTRUCTION CORP.
156 Almeria Ave. Coral Gables, Fla.

Research and Development

Two engineers, one recent graduate, one more mature. Experience in research and development in concrete and soils desirable, particularly in highways. Permanent challenging work in Laboratory and field. Desirable facilities in suburb north of Chicago.

P-4934—Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL

ENGINEERS
DESIGNERS
DRAFTSMEN

Prefer several years or more experience in any of these fields:

BRIDGES

BUILDINGS
EXPRESSWAYS
HYDRO PROJECTS
TEST FACILITIES*

Will consider lesser experience with good educational background, including several recent graduates to round out a planned expansion program. Occasional openings for combination field men. These are permanent additions to our regular staffs.

We are professional engineers engaged primarily in design which covers a wide scope of practice. The variety and unusual character for example, the proposed world's largest bridge project—offer excellent opportunity for professional development and advancement.

Immediate openings in our St. Louis general offices and occasionally in our San Francisco branch office. Confidential interviews can also be obtained at Washington, D.C., and Portland, Oregon.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Please write fully, including salary data, to

SVERDRUP & PARCEL, Inc.

ENGINEERS — ARCHITECTS

915 Olive St. Louis 1, Mo.

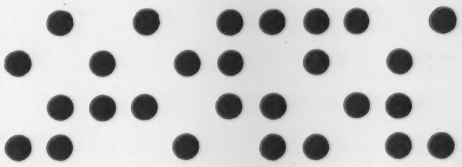
*We are designers of the technical facilities for the Arnold Engineering Development Center, operated by our subsidiary, ARO, Inc.

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

HARZA ENGINEERING CO.

400 W. Madison St. Chicago 6, Ill.



COMPUTERS

If you are an experienced computing analyst—or if computing and data reduction are new to you but you are a qualified engineer—there is interesting work as well as a bright future for you in Northrop Aircraft's growing Computer Center at Hawthorne, California.

Applied mathematicians and engineers are needed as computing analysts for assignment to Northrop's analogue computing facility, as well as the newly expanded digital electronic computer department which provides unparalleled service in the practical solution of complex engineering problems.

Northrop has many openings on its other projects having to do with jet aircraft and missile design. They include positions for electronics and electro-mechanical engineers and lab technicians. In addition to attractive compensation, Northrop offers benefits unexcelled in the airframe industry as well as helpful cooperation by forefront engineers for your professional advancement.

You'll like the comfortable working conditions, friendly people and modern equipment at Northrop. And you and your family will be living in Southern California where sea, mountains and desert offer year 'round recreation.

If you qualify for any phase of computer research, design or application, we invite you to contact the Manager of Engineering Industrial Relations, Northrop Aircraft, Inc., ORegon 8-9111, Extension 1893, or write to: 1015 East Broadway, Department 4600-A, Hawthorne, California.

NORTHROP

NORTHROP AIRCRAFT, INC., HAWTHORNE, CALIFORNIA

Producers of Scorpion F-89 Interceptors and Snark SM-62 Intercontinental Missiles

6-A-90

HIGHWAY ENGINEER

Highway Engineer with 8 to 12 years experience in design and administration. Must be able to assume heavy responsibility. Excellent opportunity with established consulting engineering firm in Middle West. Must be registered.

P-4635, Engineering News-Record, 520 N. Michigan Ave., Chicago 11, Ill.

WANTED

Superintendent Engineer

Estimating and complete charge of asphalt Paving, Ohio Specifications. Must have experience and references. Steady employment.

P-5059, Engineering News-Record, 520 N. Michigan Ave., Chicago 11, Ill.

ENGINEER

STRUCTURAL STEEL

Large fabricator & erector NY area offers oppty for engineer experienced in steel construction. Must be capable of coordinating detailing architects, & engineers, shop & field. Company benefits. Salary open—depending on background & experience. Send full particulars

P-5058, Engineering News-Record, Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

POSITIONS VACANT

(Continued from page 153)

Highway and Bridge Engineers, Designers, Draftsmen, and Chief of Party. Permanent positions available. (Location Southern Connecticut). Send resume of experience to: P-4969, Engineering News-Record.

Construction Engineer well experienced in heavy reinforced concrete work. Job in Columbia, S. A., Spanish not required, 1 yr. contract with 1 yr. option; salary plus profit sharing. Send complete resume. P-5024, Engineering News-Record.

Estimator—for leading, established eastern Mass. highway, bridge and waterfront contractor. Extensive experience in heavy construction necessary. Resume and salary requirement to P-5071, Engineering News-Record.

Teaching—Structures, Highways, Fluid Mechanics Specialists at assistant or associate professor level. Opportunity to engage in research at Fritz Engineering Laboratory. Also openings as graduate teaching and research assistants and instructors, with opportunity for advanced degrees. Head, Dept. of Civil Engrg. Lehigh University, Bethlehem, Pa.

Engineer Traffic, Engineer Office, apply City of Santa Clara, California.

Land Surveyor or Engineer for office located in Chicago. Duties to be checking, computing, drafting of surveys, subdivisions and general office work. Salary commensurate to ability and experience. State full qualifications. P-5068, Engineering News-Record.

Civil Engineer for Public Works Department of New Jersey municipality for surveys and construction, field and office. State education, experience and salary requirements. P-5038, Engineering News-Record.

Engineers on water works, sewerage and sewage treatment projects. Experienced in design and plan preparation for sanitary projects or work of related type. Opportunity for permanent connection with Ohio consulting firm in long established practice. Please provide full details of experience, education, references and salary. P-5047, Engineering News-Record.

Const. Supers. Prod. men for top Bergen IND bldr. Send resume, following, sal. P-5045, Engineering News-Record.

Const. Estimator & Asst. Exec. for top Bergen IND bldr. Write following, sal. P-5046, Engineering News-Record.

Wanted: Field Maintenance Superintendent for large inventory, Modern Heavy Construction Equipment Company. Field administration experience and Technical training desired, with capacity to assume complete responsibility for maximum operating efficiency at minimum cost. Foreward resume, including photo, age, education, previous employment, marital status, objectives and salary to: Davis S. Craven, Equipment Superintendent, Replogle Equipment Company, P. O. Box 308, Circleville, Ohio.

EMPLOYMENT SERVICE

Salaried personnel, $5,000-$30,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings. Dept. L. P. O. Box 674, Manchester, Vermont.

EMPLOYMENT AGENCY

Wanted Engineers, Designers, Draftsmen All lines. Chemists, teachers and industrial engineers. Recent grads. Cleveland Engineering Agency 2132 E. 9, Cleveland 15, O.

POSITIONS WANTED

Concrete and Materials Engineer, registered P.E., 25 years experience in all phases of Concrete and Concreting materials, including being in charge of laboratory testing and field inspection forces. PW-4881, Engineering News-Record.

Architects' Superintendent—ten years experience—desires work in middle Atlantic States. PW-4962, Engineering News-Record.

Estimator, Project Manager, Purchasing, Highway Construction. 40 years experience, 60 years of age, good health, Long Island preferred. PW-4913, Engineering News-Record.

General Construction. Manager or Superintendent. Experience in hospital, schools, monumental, industrial buildings, canals. 34 years experience. Speak English, French, Spanish. Best references. Would like to work South America, Spain or South U.S.A. Available after 2 weeks. PW-4904, Engineering News-Record.

Civil Engineer, Calif. Reg., desires position in Latin America. Structural and Hwy. design exp. Age 29. Fluent Spanish. PW-5050, Engineering News-Record.

Equipment Supt., Master Mechanic, 45 yrs. old. 26 yrs. experience in field and shop management and administration. With all types construction and equipment. PW-5011, Engineering News-Record.

Designer, Estimator or Construction Supervisor with college education, three years experience. Available at once. PW-4993, Engineering News-Record.

Purchasing: Excellent experience in heavy construction equipment, parts, tools and camp supplies, some office management and special expediting. Will relocate. PW-4992, Engineering News-Record.

POSITIONS WANTED

Construction Executive sound experience all phases, bid to completion, buildings and heavy construction, available as project manager, chief estimator or similar position where scope and volume require top man. Now employed. Minimum $15,000. PW-4709, Engineering News-Record.

Dredging Engineer. All phases. Layout, design, supervision, operation, hydro-graphic surveying, inspection. Will contract for individual jobs anywhere in world. Graduate, reigstered, 40 years old, self-employed. Reference and record on request. John Huston, Corpus Christi, Texas. TErminal 5-7493.

Structural Engineer, registered, graduate, 30 years subways, power plants, buildings, chemical plants, waterfronts, foundations, etc., available for responsible position. PW-5027, Engineering News-Record.

Structural Engineer—B.C.E. Registered, 6 yr. experience Steel & Conc. Bldg. Design. Married, 34, prefer consultant or Arch.-Engr. firm in South or Southeast. PW-5031, Engineering News-Record.

Project Manager, Administrative Engineer, registered, 22 yrs. experience design, supervision and construction highways, airbases, and large plant development. Available June. Salary $10,000. PW-5037, Engineering News-Record.

Superintendent, Field Supervision, constructing Industrial, commercial, Institutional, Large Scale Housing, Churches, etc. Desires similar position with reliable organization. 25 years experience, resident of New Jersey. Can travel. PW-4891, Engineering News-Record.

Civil Engineer, 11 years experience all phases Road & Bridge Construction, permanent position. Southwest or South. PW-5072, Engineering News-Record.

Structural Steel—17 years experience in Erection, Estimating, Chief Draftsman, Sales, Asst. Mgr. current salary $13,000. Licensed civil. Prefer West or Southwest. PW-5073, Engineering News-Record.

Senior Structural Design Engineer, Estimator, Spec. Writer. Thorough supervisory experience leading engineering & const. firms. Power plants, large industrials, waterfront structures, dams, airfields, bridges, etc. Permanent position with industrial or consulting firm wannted. M. Atl. or N.E. PW-5074, Engineering News-Record.

Superintendent 22 yrs. experience highway and heavy construction. Florida or West Indies. Age 45. Minimum $12,000. PW-5076, Engineering News-Record.

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(Classified Advertising)

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UNDISPLAYED ——*RATES*—— *DISPLAYED*

$2.10 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

The advertising rate is $23.60 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW ADVERTISEMENTS or Inquiries to Class. Adv. Div. of Engineering News-Record, P. O. Box 12, N. Y. 36, N. Y. May 23rd issue closes May 13th

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.

NEW YORK: P. O. Box 12 (36)

CHICAGO: 520 N. Michigan Ave. (11)

SAN FRANCISCO: 68 Post St. (4)

WORK WANTED

Prestressed Concrete Problems Solved. Design of beams, special structures & plant layout. WW-5013, Engineering News-Record.

Structural steel and reinforced concrete detailing, fast accurate service. P.O. Box 2274, Waterloo, Iowa.

STRUCTURAL ENGINEERING

ARCHITECTURAL ENGINEERING

WILSON *Engineering Corp*

College House Offices HARVARD SQ. CAMBRIDGE MASS

LEASING

HOUSE TRAILERS

Rental may apply to purchase price.

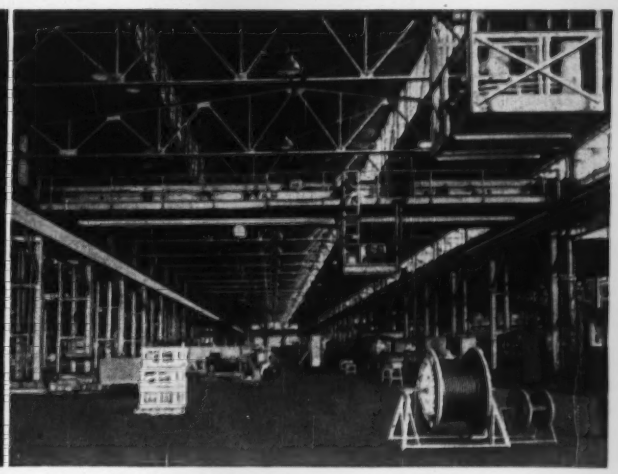
HURST PONTIAC CO.

401 N. Main St. Edwardsville, Ill.

SALE FOR RE-ERECTION INDUSTRIAL STEEL BUILDINGS

CHOICE BUILDINGS STILL AVAILABLE

LOCATED AT EDDYSTONE, PENNA. (Suburb of Phila.)



MODERN • ONE STORY

BUILDINGS TOTAL 1,300,000 SQ. FT.

UNITS FROM 30,000 TO 725,000 SQ. FT.

MATCHED-MARKED & LOADED F.O.B. CARS FOR RE-ERECTION

We will furnish foundation drawings and re-erection diagrams

89 OVERHEAD TRAVELING CRANES

From 10 ton to 70 ton capacity. 40 ft. to 80 ft. span. Immediately available. Sold either separately or with building structure. These cranes are cab operated, 230 volt D.C. operation. Several of these cranes have auxiliary trolleys.

These buildings are ideal for practically any type of industry and are geared to efficient, economical operation. Divided to suit your specific requirements.

- Length from 173 to 800 ft.
- Bays from 37 to 80 ft. wide. Clear span.
- 89 overhead traveling cranes.
- Buildings completely covered with 10 to 70 ton cranes.
- Buildings perfect for straight line production.

Detailed engineering data is available upon request. For additional information, write, wire or phone

LURIA BROTHERS & COMPANY, INC. PHILA. NATIONAL BANK BLDG. Phila. 7, Pa. • Rittenhouse 6-7455

LOW COST INSTALLATION AND OPERATION

CABLEWAYS

IMMEDIATE SHIPMENT

ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT OR BUY

FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS

FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

FOR SALE

48B Bucyrus Erie Shovel diesel 2 cy
10,000' 9" x 9" road forms
1,550' 6" x 6" road forms*
2,500' 16" x 12" airport forms*
*Used four months only

WILLIAMS CONSTRUCTION COMPANY
Box 5045 Balto. 20, Md. Murdock 6-6600

WIRE ROPE galvanized 6x7 (unused) w/hemp center in coils 5/16"-400' and 7/16"-320' can be used for ships, rigging, mines, tramways, guard & guy cable, drilling, sand lines, and etc. Sell at a fraction of original cost. 1200 lb. PILE HAMMERS, hoisting blocks for heavy lifting.

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Prospect Place Asbury Park, N. J.
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Editorials

Sign of the Season

WARM WEATHER IN EARLY SPRING not only is a delight to the senses but also a spur to construction operations. Under the warmth that brings out the leaves and flowers, new projects germinate and new structures blossom out all over the country. However, the advent of warm weather also brings a change in construction techniques, particularly in placing concrete.

This is the time contractors begin to take precautions against rising temperatures. For they know that more trouble may be encountered in controlling concrete quality during hot weather than in cold.

This then is the time to store cement where it will not be heated by the sun, because cement at high temperatures (150 F or higher) should not be used. Mixing water should be kept cool, if necessary artificially chilled. Aggregate stockpiles should be sprayed with water to keep down the temperature. The time from charging a mixer to discharge in the forms should be held to a minimum. Concrete in exposed locations, such as highway pavements, should be promptly protected against rapid evaporation of water from the surface. And test specimens should be properly cured and protected, so as not to indicate inaccurate low strengths.

The change from cold-weather to hot-weather concreting has become just as characteristic of the change in seasons as the awakening of the dormant plant world.

Substitute for "or Equal"

SEEKING TO IMPROVE writing of specifications for building construction, the Building Research Institute assembled a group of architects, engineers and manufacturers' representatives and asked for suggestions. Among the recommendations the group offered, the most important seems to be one urging that the term "or equal" in association with trade names to specify a product be avoided on private work.

The "or equal" clause has long been controversial. Specification writers who favor it argue that it is the simplest way to specify a product without completely eliminating competition. Opponents claim that it gives contractors too much of a voice in selection of materials, with the danger that the product selected will not be the equal of what the designer had in mind.

Instead of the "or equal" clause, the BRI group recommended that the Special Conditions of the contract include the following paragraph:

"Variation from Materials Specified—Materials or products specified by name of manufacturers, brand or trade name or catalog reference shall be the basis of the bid and furnished under the contract unless changed by mutual agreement. Where two or more materials are named, the choice of these shall be optional with the contractor. Should the contractor wish to use any materials or products other than those specified, he shall so state, naming the proposed substitutions and indicating what difference if any will be made in the contract price for such substitution, should it be accepted."

Considering the desirability of encouraging competition for supplying products for a project and the danger of misinterpretation of descriptive requirements when used instead of trade names, the proposed paragraph makes good sense. Architects and engineers not already using it should give it a fair trial.

Rough Going for Housing

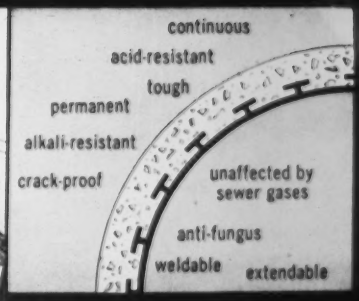
THERE IS NO DENYING THE FACT that homebuilding has dropped back to the rear of the construction parade. Based on the actual housing starts in January, February and March, the seasonally adjusted annual rate of starts has slid from 1,010,000 to 910,000 to 880,000. The latter figure is about what the most pessimistic estimators foresaw for the entire year, so unless there is improvement they will prove to be right.

Fortunately there is hope for improvement. Combined with the opening up of good building weather, there is the continuing rise in personal savings, part of which will gravitate toward mortgage investment. In this connection the recent annual report of the Institute of Life Insurance contains a particularly significant statement: Life companies now hold about one-fifth of the country's home mortgages, whereas a decade ago they held only one-tenth. This new attitude toward home mortgages provides reasonable assurance that the life companies will continue to invest new funds in home mortgages, and the rise in personal savings can be counted on to provide some of these new funds.

A sobering note, of course, is that conventional mortgages will be most appealing rather than the lower interest and lower down payment FHA and VA mortgages that swell housing starts more. Nevertheless, continuing life insurance purchases of mortgages of whatever kind is an encouraging sign.

Another favorable development is the recent government regulation allowing savings and loan associations to purchase conventional mortgages outside the old 50 mile radius. Thus areas short of money for housing can get supplies from surplus areas—a money distribution operation in the mortgage market comparable to the electric power grids which push kilowatts around in accordance with needs.

These factors, plus a concentrated effort on the part of homebuilders to reduce construction costs and thus make housing a better buy, can arrest the downward trend in housing starts. Something better than the current level is still a possibility.



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